TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

AUGUST 15, 1960
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DROPPING PENNIES TO SAVE DOLLARS

Plant Engineering Notes, by John S. Reed

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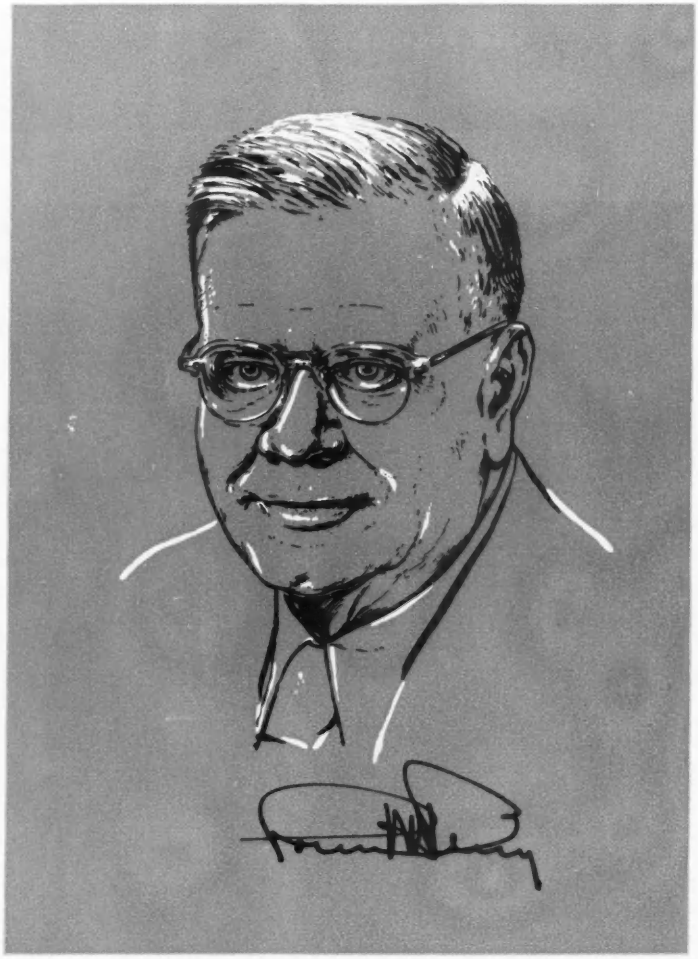

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TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

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THE TE&M FRONT COVER

Officers and directors, New York State Telephone Association (l. to r.) seated: SHELDON A. BIRDSALL; Secretary-Asst. Treas., DONALD F. DAVISON; Pres., GEORGE S. BECKWITH; Vice Pres., C. RAY LLOYD; Treas., W. MALCOLM GRISWOLD; and Executive Sec., HAMILTON A. CUNNINGHAM. Standing (l. to r.): FRANK D. FANCHER, MARSHALL K. TAYLOR, WILLIAM A. SEELY, WILLIAM A. KERN, FRED S. FLORANCE, and ALBERT N. SEWARD. Newly appointed director, Roderick A. Nixon, is not in picture.

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MORE revenue per dollar of investment with the Petite phone?

a whale of a lot! The exact amount depends on your particular operation. But one thing's sure: you earn a lot more revenue sooner with Stromberg-Carlson's PETITE telephone than with any other type of extension . . . and more revenue per dollar of investment.

Sounds exciting, doesn't it? We can give you "chapter and verse" on just how exciting it is!

The amazing revenue performance of the PETITE is all worked out for you. We have the proof in black and white. The figures demonstrate conclusively why hundreds of independent operating companies* have already ordered this wonderful little profit-booster—available for delivery from stock July 15.

Want to know the whole story? Drop us a line or shoot us a wire. Or phone your nearest Stromberg-Carlson representative. In Atlanta call TRinity 5-7467; Chicago: STate 2-4235; Kansas City: HArrison 1-6618; Rochester: HUbbard 2-2200; San Francisco: OXford 7-3630.

*Names on request

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Lightning surges often create high voltage between a c
ble's core and shield, sometimes between its individual co
ductors. In either case, Anaconda Alpeth provides a hig
degree of protection against damage from such voltage

**Extra protection against surge voltage between shie
and core** – A high-dielectric-strength tape is utilized as
binder between core and shield. The shield is a 0.008-in
aluminum tape applied longitudinally with overlap. Whe
properly grounded, the low d-c resistance of the shie
reduces the possibility of lightning damage, and limits t
effect of induction from nearby power lines.

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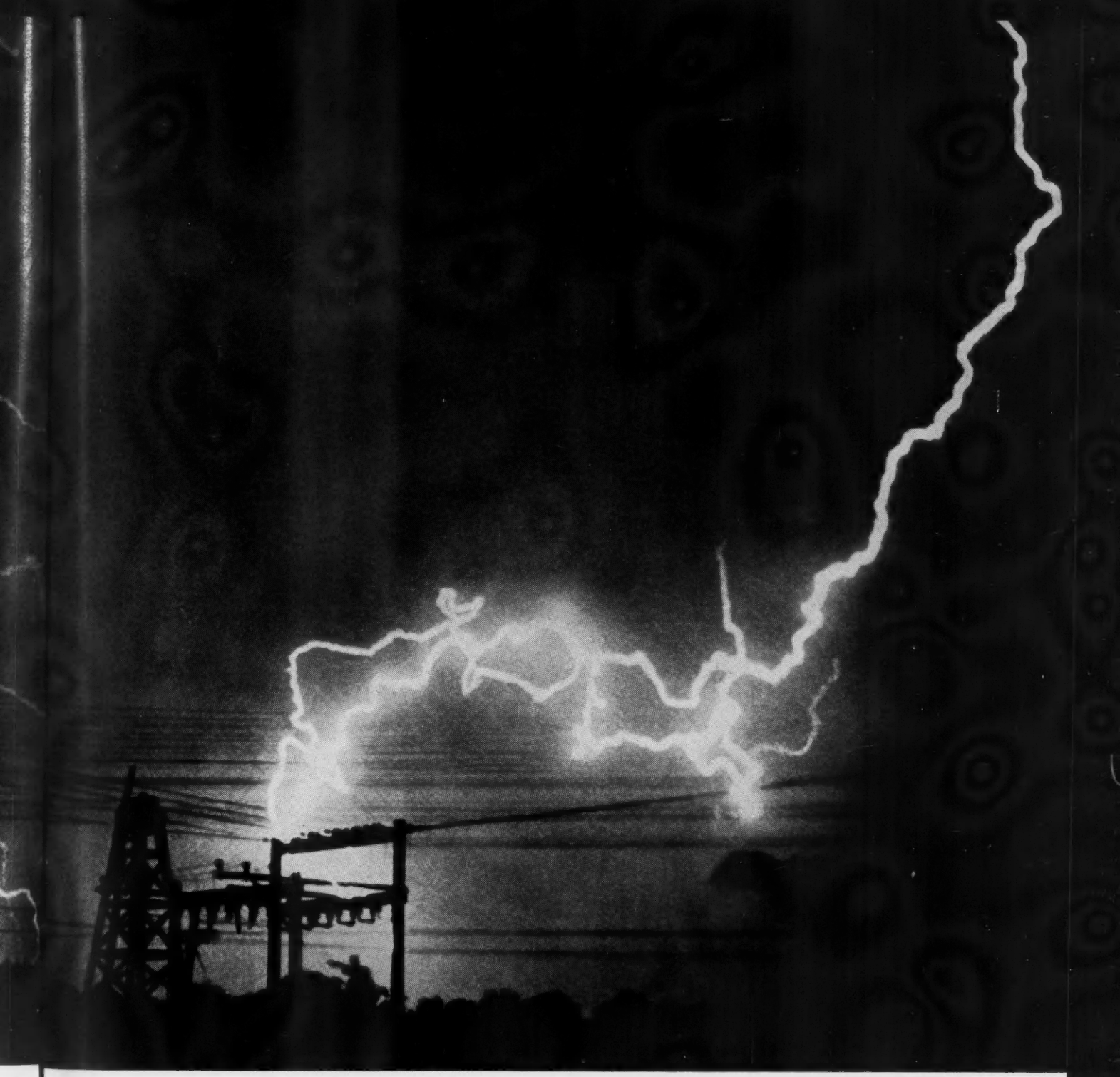

protection against lightning damage

Extra protection against surge voltage between conductors – Each conductor is insulated with high-molecular-weight polyethylene having high dielectric strength and other excellent electrical properties. The insulation is pre-blended with electrically balanced color pigments to assure maximum freedom from low-resistance imperfections.

Increased resistance to lightning damage is only one long-range advantage offered by lightweight Anaconda Alpeth. Full color coding makes for easy splicing, fast terminating and often one-man repair. The outer jacket of high-molecular-weight polyethylene is highly resistant to abrasion, moisture, weathering, corrosion, and environmental cracking.

Find out more about the cost-cutting possibilities of Anaconda Alpeth Telephone Cable. Call your nearest district office. Or write: The Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

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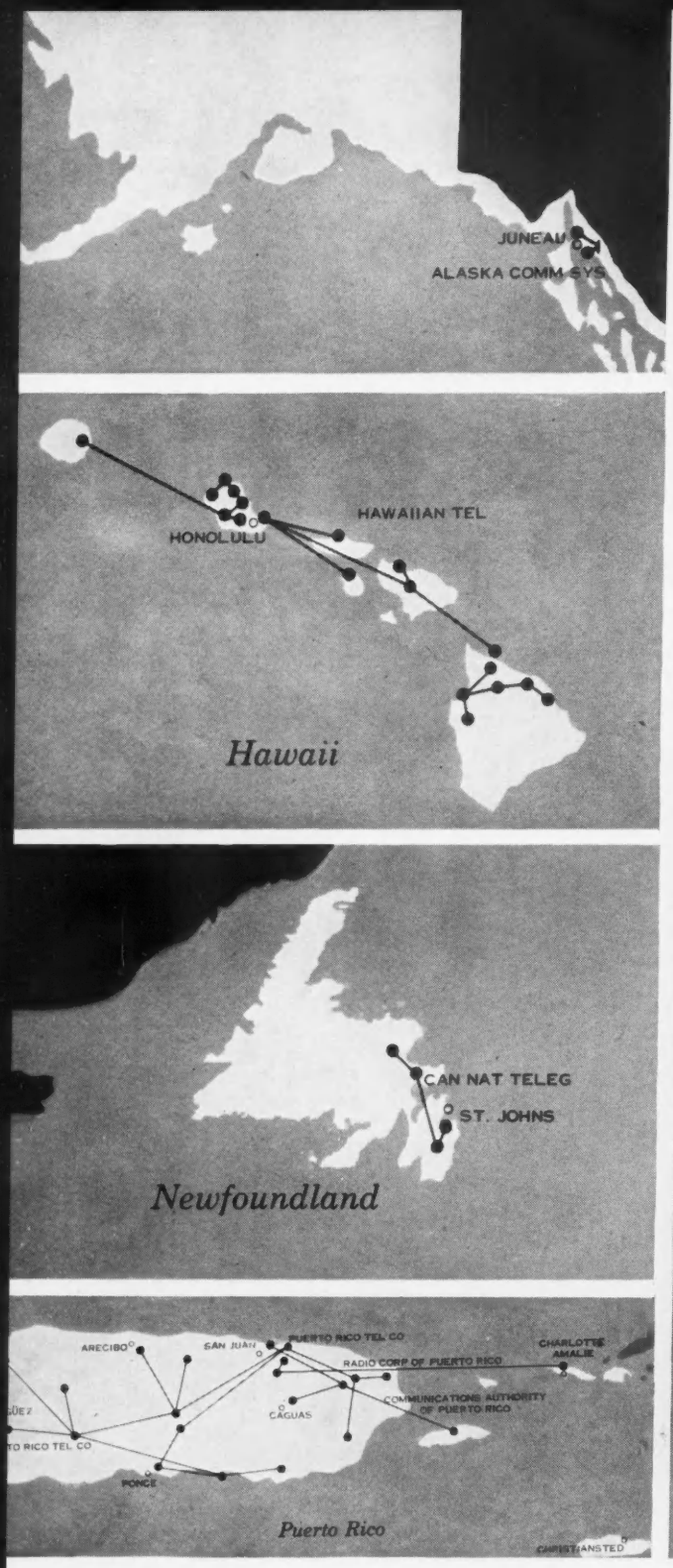
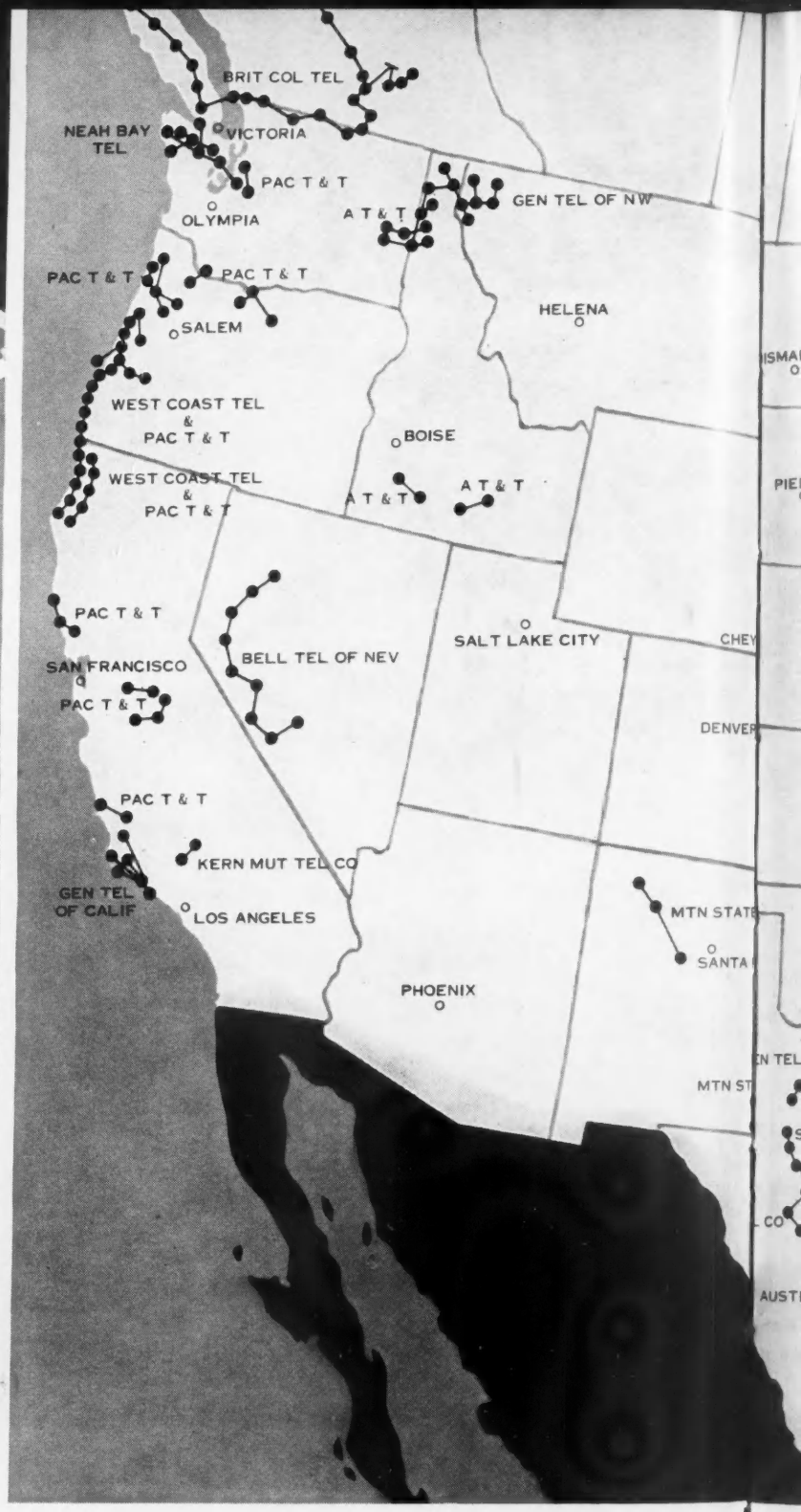
FOR ANACONDA ALPETH

the independent manufacturer for the independent telephone industry





Why so many *Lenkurt* microwave systems a

First, Lenkurt's Microtel microwave system offers *as standard equipment* many features that are considered "extras" for other systems. For example, Microtel has *automatic* frequency control that assures you maximum frequency stability.

Second, Microtel's superior, constant-output klystron (warranted to 5,000 hours) requires no temperature-compensating oven. Since the tube operates at lower

are springing up across the country

temperatures, life expectancy is greatly increased. Field experience with Lenkurt Microtel indicates that klystron life will average at least 15,000 to 18,000 hours.

Before you spend one penny for carrier or microwave, let our staff engineers help you in system planning. These men are specialists in helping you make fullest and most profitable use of existing facilities . . . and you are assured of equipment recommendations tailored to your needs.

For full details on Lenkurt microwave or for help in system planning, call your nearest Automatic Electric representative, or the Director, Carrier & Radio Sales, Automatic Electric Sales Corporation, Northlake, Illinois.

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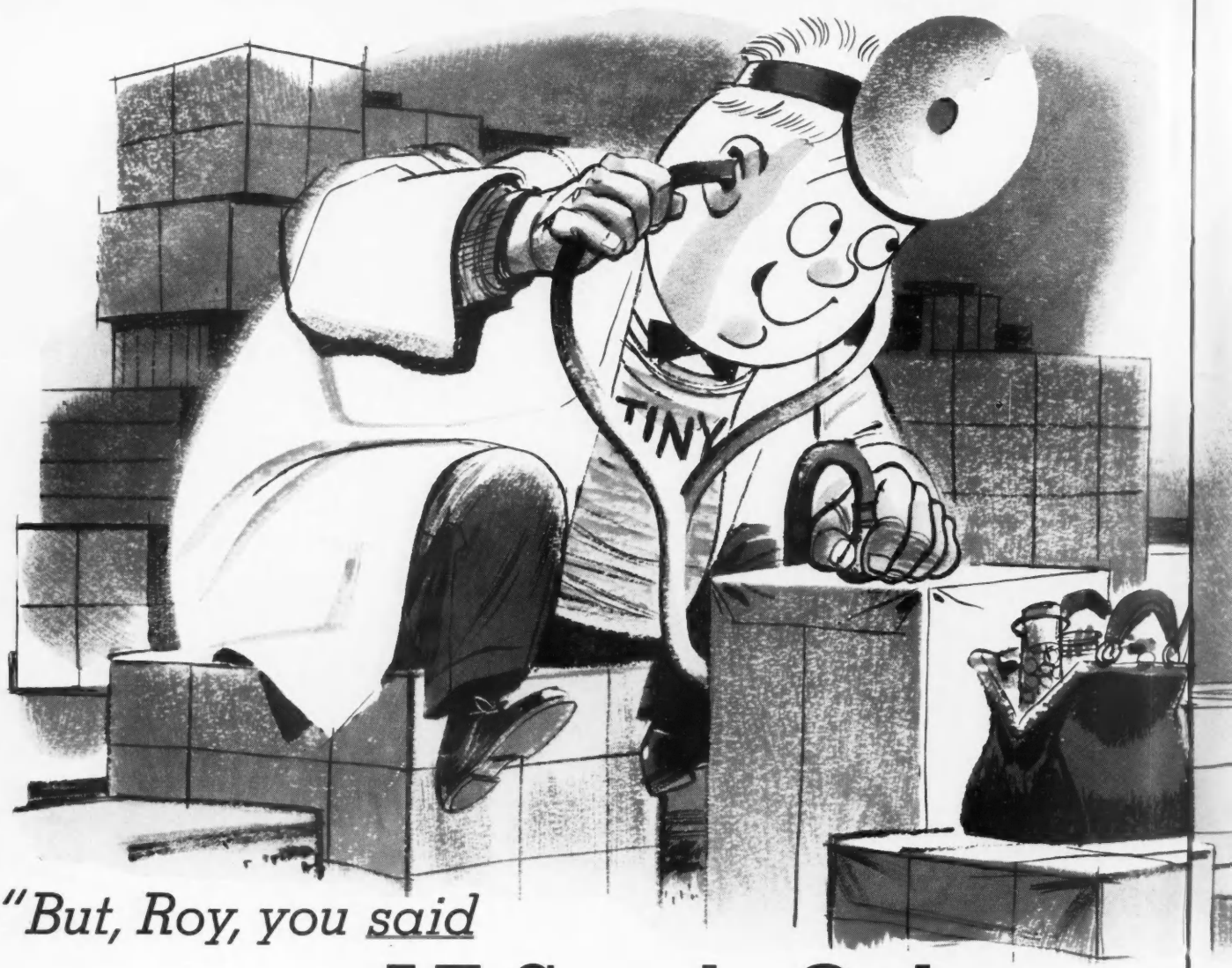
GENERAL SYSTEM



"But, Roy, you said

AE Supply Orders mus

Stethoscope on your supply order? To Tiny, this idea seems quite normal. After all, the boss repeatedly says that all AE supply orders must be carefully inspected! Poor Roy—if he has enough patience, he may be able to explain the difference between accurate order checking and a hospital examination.

AE doesn't compete with physicians. But, we do check your order carefully before it leaves our warehouse. Whether your supply order is for one item or a thousand, close attention to detail is always an important part of our service. You see, we expect to be in the telephone supply business for many years ahead. And the best way we can do this is to give you *prompt delivery* from a *large stock* of *famous brands*. Contact your AE warehouse. Let us prove again that—at AE, you get all 3.

use carefully inspected!"

at AE you get all 3

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LARGE STOCKS
FAMOUS BRANDS

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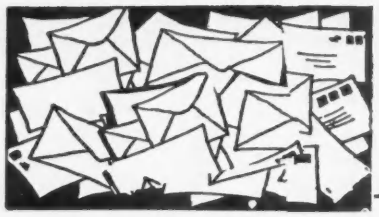

LETTERS to the editor

"To Push A Sales Program"

TO THE EDITOR: — "As we are just beginning to push our sales program, here at Eastern Illinois Telephone Company, I found Mr. Stacey's article in the April 1 issue of *Telephone Engineer and Management* on 'Bill Stuffers' very interesting. I would appreciate your sending me some information on the Telephone Advertising Institute and any other sales information you think a company of 6700 stations might be interested in. We are planning to direct the initial phase of our sales program more toward extensions and colored phones. We certainly appreciate any assistance you might be able to give us."

D. F. Grothe,
Comptroller,
Eastern Illinois Telephone Co.,
Rantoul, Ill.

"Rural Distribution Wire"

TO THE EDITOR: — "Please send two copies of your operating manual describing the use of rural distribution wire as written up in your 1960 *Catalog-Directory* beginning on page 230. Send copies and invoice to . . ."

M. Gotstein,
Owner,
Forestville Telephone Co.,
De Pere, Wis.

Sorry, no reprints. We have sent you two sets of tear sheets. — Ed.

"Some Practical Information"

TO THE EDITOR: — "I find the 1960 edition of *Telephone Engineer's Catalog-Directory* very interesting and also quite helpful. I particularly was interested in the special report, 'How To Detect Causes and Correct Induced Noise Conditions.' It appears that most telephone companies have problems along these lines and usually any information obtained is so technical that it is useless.

"I would like to see some practical information on line losses, on both toll and local facilities. Possibly there are simple ways to measure, etc. Also information on maximum allowable losses, etc.

"Would you please send me an application for the 'Telephone Engineer'."

Donald O. Needham,
Equipment Engineer,
Dalton Telephone Co.,
Dalton, Ga.

Thanks for your comments. We'll have an article on line losses in a future issue of TE&M. — Ed.

"A Big Help"

TO THE EDITOR: — "Enclosed is the Free Literature Request Form from your 1960 Edition of the Catalog Directory. I just wanted to write a word or two commending *Telephone Engineer* for the excellent job done in compiling a listing of these many interesting brochures and extending this service to its subscribers. It is a time-consuming job keeping up with developments from the manufacturers; this is a big help."

D. Gilman,
Equipment Chief,
Ace Telephone Association,
207 E. Cedar St.,
Houston, Minn.

Epoxy Resin

TO THE EDITOR: — "Your May 1 issue of Telephone Engineer & Management outlines under 'Plant Man's Spec Book' a method for installing pressure plugs on telephone cable. The method described employs self-curing epoxy resin manufactured by Minnesota Mining & Manufacturing Co. We would appreciate receiving detailed information on this manufacturer's product and technical instructions pertaining to its use."

Richard W. Nielson,
Western GEEIA Region Resident Engineer, U. S. Air Force,
Vandenberg Air Force Base,
California.

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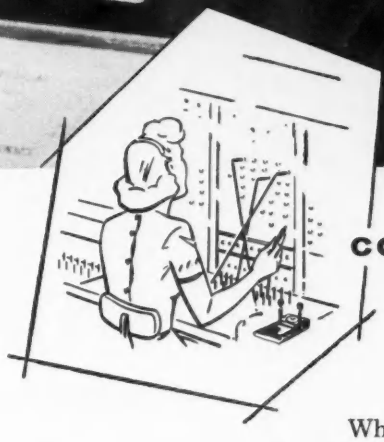

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Busy telephone operators are finding the new Calculagraph 60-minute dial *easier to use* and they can now handle more calls more efficiently.

Why? Because they don't have to remember to stop and add 30-minutes to long conversations. This new 60-minute Calculagraph dial does it for them.

This new Calculagraph 60-minute dial assures you, too, of *all charges* due on every call. If you now have 30-minute dials, you can convert your Calculagraphs to the 60-minute dial.

Whether your needs can be met with either the 30-minute or 60-minute dial you can be assured of *100% accuracy* on *all toll calls* with Calculagraphs on *your* switchboard.

Write today for complete information.

CALCULAGRAPH Company

276A Ridgedale Ave., Hanover, N. J.

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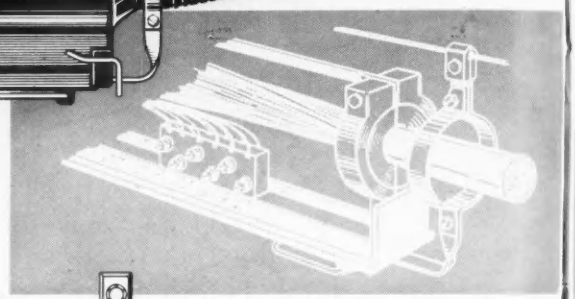
Cook Electric Company

Offers

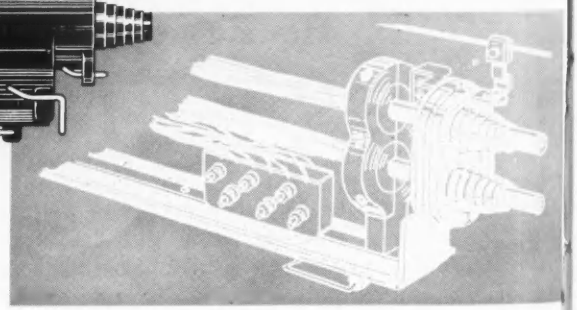
The most complete line of TERMINAL-SPLICE ENCLOSURES FOR PLASTIC CABLE

These versatile, neoprene enclosures are for use on plastic sheathed aerial cable to provide weather tight covers for cable splices, termination, protection equipment and encapsulated loading coils.

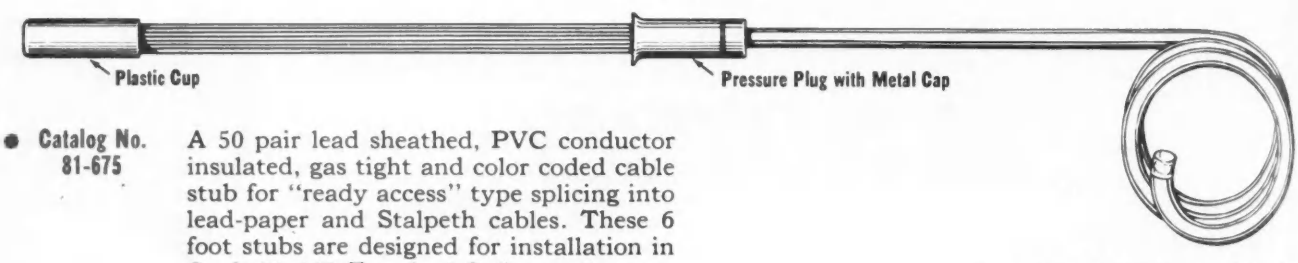
They feature easy accessibility, straight through and branch splicing, and are easily re-opened for re-arranging drops or for maintenance operations.



● **Catalog No. 81-250** — A heavy duty enclosure 28 inches long for plastic cables from 1 inch to 2.2 inches in diameter. The unit is furnished complete with all the necessary hardware.

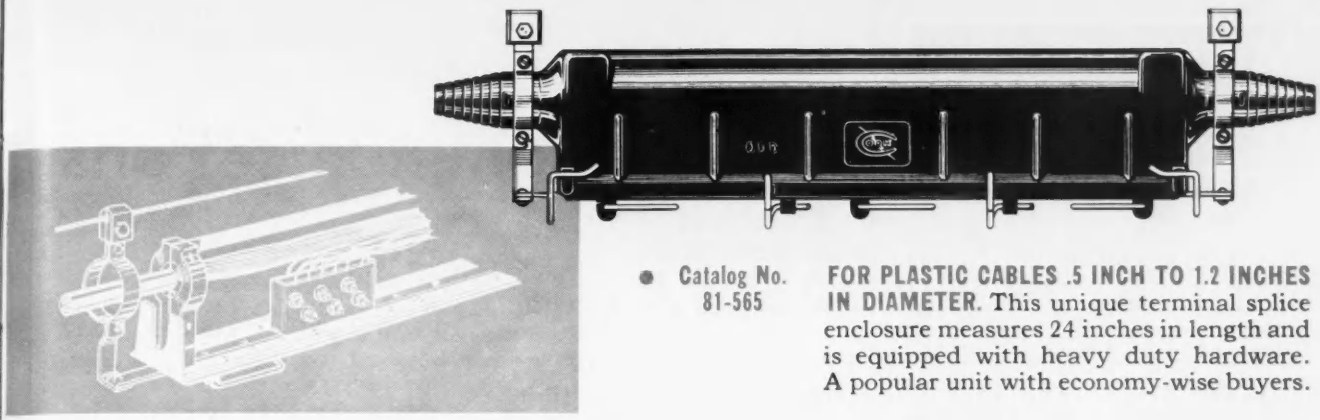


● **Catalog Nos. 81-417 81-418** — These units measure 25 inches in length and are also heavy duty enclosures. 81-417 is for main and branch cables .5 inch to 1 inch diameter, and 81-418 is for 1 inch to 2.2 inch plastic cable diameters.



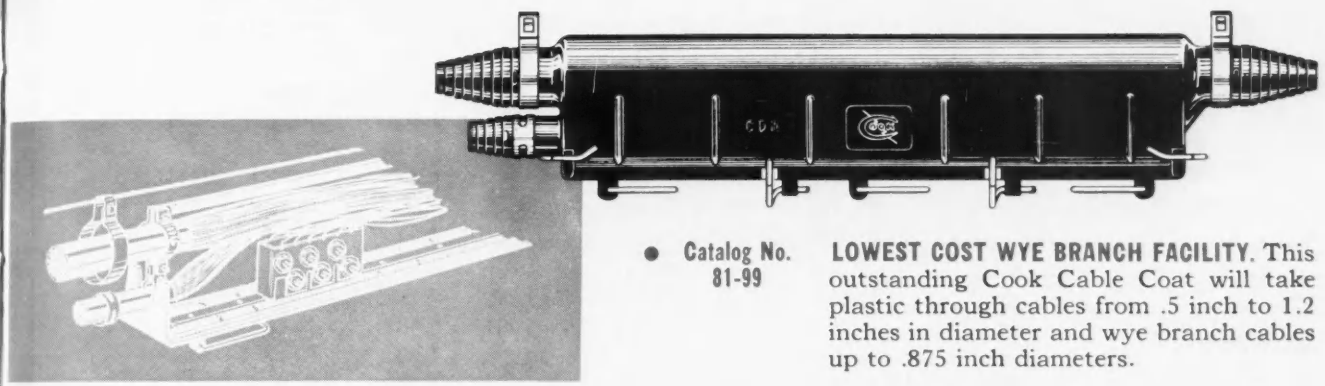
● **Catalog No. 81-675** — A 50 pair lead sheathed, PVC conductor insulated, gas tight and color coded cable stub for "ready access" type splicing into lead-paper and Stalpeth cables. These 6 foot stubs are designed for installation in Cook 81-565 Terminal Splice enclosures.

● **Available Through Your Local Distributor**



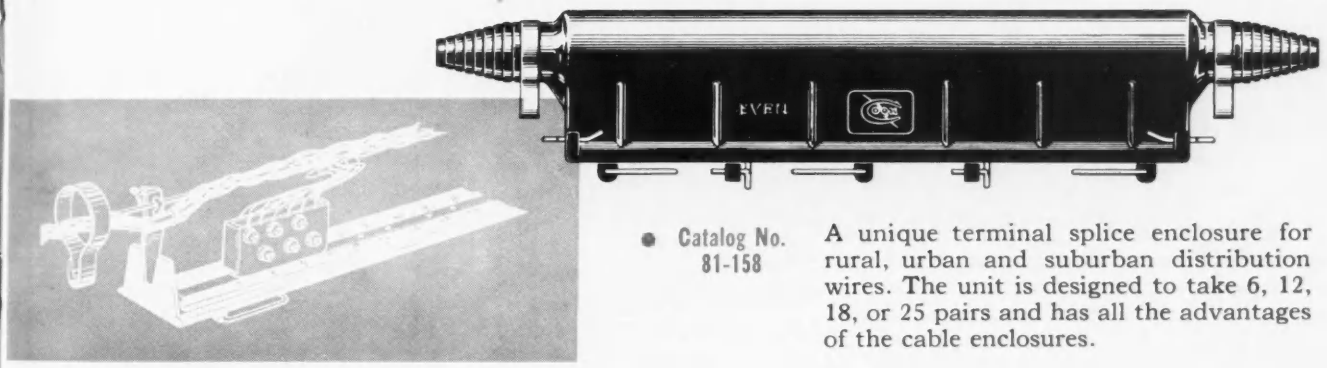
- Catalog No. 81-565

FOR PLASTIC CABLES .5 INCH TO 1.2 INCHES IN DIAMETER. This unique terminal splice enclosure measures 24 inches in length and is equipped with heavy duty hardware. A popular unit with economy-wise buyers.



- Catalog No. 81-99

LOWEST COST WYE BRANCH FACILITY. This outstanding Cook Cable Coat will take plastic through cables from .5 inch to 1.2 inches in diameter and wye branch cables up to .875 inch diameters.



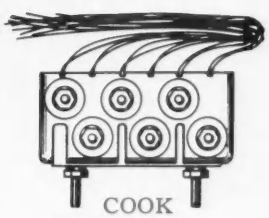
- Catalog No. 81-158

A unique terminal splice enclosure for rural, urban and suburban distribution wires. The unit is designed to take 6, 12, 18, or 25 pairs and has all the advantages of the cable enclosures.

COOK ALSO OFFERS A FULL LINE OF TERMINALS AND LOADING COILS

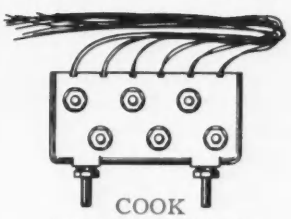
COOK PROTECTED TERMINAL BLOCKS

Furnished in 3, 6, and 16 pair with 41-285 Minigap .005″ gap or 41-610 Minigap .010″ gap.



COOK WASHER-GAP TERMINAL BLOCKS

A 6 pair protected terminal block that can be ordered with or without leads.



COOK UNPROTECTED TERMINAL BLOCKS

A 6 pair unprotected terminal furnished with or without leads.

COOK LOADING COILS

Hi-Fi loading coils. Furnished in 1 to 25 coil sizes, with REA approved color coded leads.

COOK ELECTRIC Company

Since 1897

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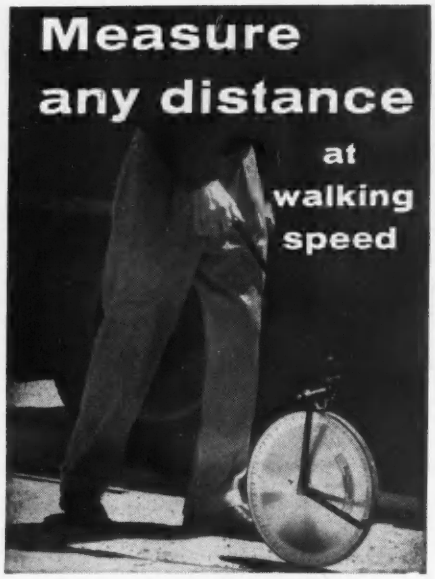

records 100,000 ft.
automatically!

It's So Easy to measure with a Rolatape ...and you save time on every estimating job...no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Write for information and name of local dealer today!

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Rolatape
Measuring Wheels

"Off The Board"

Communications Securities

Markets as of July 29, 1960	DIVIDEND	BID	ASKED	LAST SALE
American Tel. & Tel. Co.	3.30			89⅞
Anglo-Canadian Tel. Co. (Brit. Col. & Dom. Rep.)	1.20	40	43	
Bell Tel. Co. of Canada	2.20			46⅝
British Columbia Tel. Co.	2.20	44¾	47¾	
Calif. Interstate Tel. (Calif., Nev.)	.70	14	15	
Calif. Pac. Util. (Calif., Nev., Ore.)	.90	20¾	22¾	
Calif. Water & Tel. Co.	1.36	30¼	32¼	
Carolina Tel. & Tel. Co.	1.60	39	42	
Central Elec. & Gas Co.	1.20	25¾	27¾	
Central Tel. Co. (Minn., Ia., N. C.)	.88	21¾	23¼	
Chenango & Unadilla Tel. (N. Y.)	1.20	26	29	
Cincinnati & Suburban Tel. Co.	4.50	92	96	
Citizens Util. Co. (Calif., Pa.) "A"	stk. only	17	18¼	
Citizens Util. Co. (Calif., Pa.) "B"	.48	16¾	18	
Commonwealth Tel. Co. (Pa.)	1.00	21¼	23	
Florida Telephone Co.	1.00	26¼	28¼	
General Tel. & Electronics	.76			29¼
Hawaiian Telephone Co.	1.00	21⅛	22⅝	
Indiana Telephone Corp.	.50	23	26	
Inter-County Tel. & Tel. Co. (Fla.)	.72+stk	24½	27½	
Inter-Mountain Tel. (Va., Tenn.)	.80	15½	16½	
Jamestown Telephone Corp.	5.60	83	—	
LaCrosse Telephone Corp.	.80	15½	—	
Lincoln Tel. & Tel. Co. (Neb.)	2.60	64	68	
Lorain Telephone Co. (Ohio)	1.40	33	—	
Middle States Tel. Co. (Ill.)	.80	22	25	
Mountain States Tel. & Tel. Co. (Ariz., Colo., Mont., Tex.)	*			196
New England Tel. & Tel. Co.	1.72			35⅞
North Carolina Tel. Co.	none	⅞	1⅛	
Northern Ohio Tel. Co.	2.00	52	57	
Pacific Tel. & Tel. Co.	1.14	27½	29½	
Peoples Tel. Corp. (Pa.)	4.00	78	—	
Pioneer Telephone Co. (Minn.)	1.00+stk	35½	38	
Rochester Tel. Corp. (N. Y.)	1.00			23⅝
Southeastern Tel. Co. (Fla.)	1.00	20	22	
Southern New England Tel. Co.	2.20	43¾	45¾	
Southern Nevada Tel. Co.	1.00	26	28½	
Southwestern States Tel. Co. (La., Ark., Okla., Tex.)	1.20	23	24½	
Telephone Serv. Co. of Ohio "A"	*	27	30	
Telephone Serv. Co. of Ohio "B"	*	28	31	
Tidewater Telephone Co. (Va.)	1.40	25½	28	
Virginia Tel. & Tel. Co.	1.00	20½	23	
United Utilities, Inc.	1.40	41	43½	
West Coast Tel. (Wash., Ore., Calif.)	1.28	26½	28	
Western Union Telegraph Co.	1.40			44½
Western Utilities Corp.	.36	7⅞	8⅜	
Western Lt. & Tel. Co., Inc. (Mo., Kans., Iowa)	2.00	43½	46½	

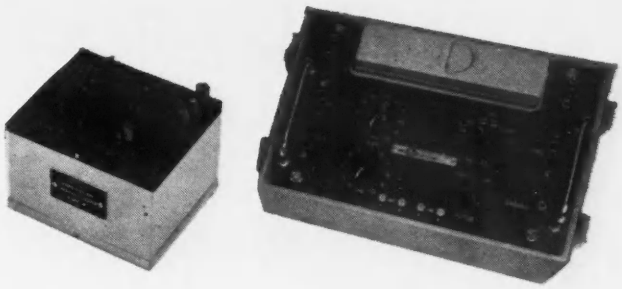
* Dividend rate on new stock after split not established

(Source of market — DEAN WITTER & CO.)

AIRTRONICS Far-end Terminating Set, designed to be used in conjunction with the Model 20B Test Hybrid, supplies the Far-end terminations required for return loss and singing-point tests.

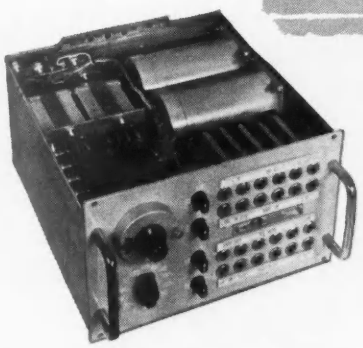
Generally, two precision networks, 115H and 115AL cover the standard cable layouts in exchange plant, (the 115H covering 19 and 22 gauge H88 facilities).

The Far-end Terminating Set consists of a precision network, network build-out decades, selector switch and jacks, and binding posts to give flexible access to the components.

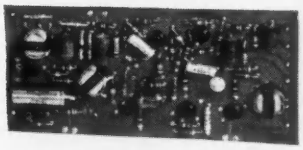


AIRTRONICS new multi-purpose, Portable Test Hybrid Set, Model 20B, makes acceptance, evaluation, and capacity balance tests easier, faster . . . locates cable opens accurately . . . accommodates standard networks. Either Singing-Point or Return Loss techniques can be applied. Accessories include external decade capacitor and variable resistor for use in locating opens, for compromise net, etc. Plug-in dial is also available.

DEPENDABLE PRODUCTS FOR MODERN TELEPHONY

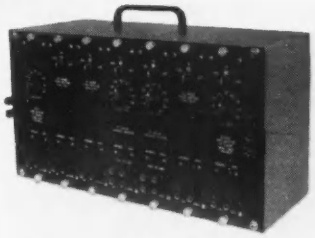


AIRTRONICS completely self-contained Program Equalizer cuts line-up time from hours to minutes. Designed for operating on standard program-loaded or non-loaded communications cables, this unit features pre-tuned circuits in 1½ KC steps from 5 KC to 25 KC. Simple switch adjustments control insertion loss of the LC network, select values of L and C, regulate line-to-drop ratios, control the circuit location of the RLC network etc. Available in portable, wall-mounting, or standard 19″ or 23″ rack-mounting arrangements.



The Switch-gain Amplifier — in a Speakerphone installation — functions as a voice-sensitive switching pad or loss, which *automatically* lowers loudspeaker volume whenever the subscriber is speaking. Loss is switched electronically to the transmitter channel while the subscriber listens. A guard circuit keeps speaker-to-microphone acoustic feed-back from causing improper switching when the speaker is operating. Net effect is reduction of acoustic coupling between loudspeaker and microphone to a degree where anyone, within 10 or 15 feet, can hear easily and distinctly without feedback or hollowness. Subscriber is not required to vary his gain control when shifting from a near to a more distant connection, or to toll.

AIRTRONICS Switch-gain Amplifier fits all Speakerphone models. Priced under $60 f.o.b.



AIRTRONICS standard Artificial Lines accurately simulate a loaded or non-loaded cable pair of any desired length — from 600 to 39,600 feet.* Multi-position switches afford instant control over total length or load section lengths, so that coil spacings may be set to better than 1%, or as much as 10%. Common irregularities such as bridged taps, mixed loading or coils omitted can be introduced in a moment.

*Available with plug-in units for either #22 or #24 gauge cable, or mixed 22 and 24 gauge. Other commonly used gauges available on special order.

another product FIRST from

AIRTRONICS INTERNATIONAL CORPORATION

P.O. Box 8576, Fort Lauderdale, Florida (6900 West Road 84)

INDUSTRY OBSERVATIONS

By L. A. GRITTEN

Feline Allure

RECENTLY in this column we mentioned the public relations value of stories about rescuing cats from telephone poles. Our thought is confirmed by no less a lover of cats than Bennett Cerf ("Cerfboard" — THIS WEEK, July 17).

Referring to magazine cover illustrations, he says the public is impervious to Marilyn Monroe and Elizabeth Taylor, and "can take a dog cover or leave it." But, he says, "Statistics have proved beyond doubt that a cat on the cover boosts the popularity of a magazine by anywhere from ten to twenty per cent."

That could apply to telephone company pamphlets and other publicity.

Legislation vs America

YOU MAY hire men to work on a job. If you think you have a right to release them when the job is terminated or changed, then you are slightly out of date. Our legislators have moved on past you.

A recent five-to-four Supreme Court decision said in effect that under existing law a company that wishes to terminate certain jobs, in order to modernize or improve its operations, must first bargain about it with the unions concerned. If the unions disagree, they have a legal right to strike against the company. This decision concerned a railroad but it is of general application.

Other countries, whether they be Cold War enemies or friendly competitors, are straining every resource and every technique to capture our markets. Here, our trade unions and the legislators who cater to them seem to be doing their best to handicap and slow up our entire industry.

Brighter Than The Sun

TWO OR three generations ago, one of the earliest attempts to transmit speech without wires used the light from an arc lamp, set in the focus of a parabolic mirror. It remained an interesting experiment.

Now comes Dr. Theodore H. Maiman, of Hughes Aircraft Co., with "LASER," light amplification by stimulated emission of radiation, described as "atomic radio-light, brighter than the center of the sun."

It is said to jump the radio spectrum gap from 50,000 million cycles to 500,000 billion cycles. Among a host of important applications, LASER offers television and voice transmission at great distances, free from static and immune to deliberate jamming. "A beam directed at the earth from a satellite 1000 miles up could be concentrated in an area about 200 feet wide."

The lost hopes of yesterday furnish inspiration for the miracles of tomorrow.

No New Thing Under The Sun?

GAS pressurization of telephone cables is being written about and discussed as though it were a recent development. We refer anyone who thinks that is the case to Ecclesiastes I-10: "Is there anything wherof it may be said, See, this is new? It hath been already of old time, which was before us."

The use of gas under pressure in cables antedates the telephone. The first dry core cables used for railway signalling in 1834 were pressurized. Seventy years later, in the first decade of this century, many telephone cables in London were pressurized. In 1910 they discontinued the system because it was difficult and costly to find the leaks, and cheaper to clear the trouble after it showed up!

Service Supreme

REPORTS of remarkable auxiliary telephone services stream in from European countries. The latest we have seen is from Hungary, where they have a telephone that records messages and repeats them back to the subscriber if he calls from another telephone, but only if he dials a secret code number.

The next exotic service may be a 'phone that will whisper back "Yes" or "No," to answer the question "Is her husband home?"'

Pest Repellent

IN *Telecommunications Reports* we read that Raytheon Co. has developed an electronic converter that emits 2,500,000 samples of information per second.

By a narrow margin, that beats our neighbor in a Montana resort, one of those fellows who know exactly how everyone else should do everything. We showed him the article and asked him if he couldn't do better than that. Since then he has not bothered us.

Forand Against

FIRST let us offer a definition. It differs from Webster's but we think it is true in substance: SOCIALIST, n., a unit of mistaken resentment, usually caused by capitalist neglect or capitalism's failure to live up to its responsibilities.

There are about 16,000,000 voters over 65 years of age in this country. Most of them, thanks to their own thrift and Social Security, can "scrape by somehow"; but many of them, many millions in all probability, just cannot afford adequate medical service at its present inflated cost. Through no fault of their own, our postwar inflation has played havoc with their savings and denied them the standard of retirement living for which they worked and saved.

Most of them do not want anything for nothing; but

for low-cost, long-life performance...

use Copperweld® Telephone Products

The initial cost of Copperweld Telephone Products is low. And the overall cost is low, too. Once installed, these rugged, non-rusting products are there to stay because a thick copper covering Molten-Welded to a high-strength steel core gives permanent protection. You get long-life, trouble-free performance—and your subscribers are assured of uninterrupted telephone service.

COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION *Glassport, Pa.*
For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

You keep your subscribers happy when you use Copperweld Wire because it talks better than any other high-strength conductor.

COPPERWELD LINE WIRE

Copperweld is the best engineered conductor for long-life, long-span construction. It's economical, strong, non-rusting, and easy to string. And Copperweld "talks better" than any other high-strength conductor.

For short subscriber loops and secondary toll lines use .080"-30. On toll lines and long subscriber loops install .104"-40.

COPPERWELD STRAND

Economy and convenience are two big features of Type M Guy and Messenger Strand. Recent developments in research and production have enabled us to produce this new, low-cost strand that's permanently strong, non-rusting, and easy to handle.

Maintenance ends when Copperweld Type M Strand is installed.

COPPERWELD GROUND RODS

For permanent grounds, dependable the year 'round, use Copperweld—the only ground rods with a thick copper covering inseparably Molten-Welded to a strong steel core. They provide stiffness for easy driving and rust resistance for long life. Copper-to-copper contacts throughout assure low resistance. For your protection, each rod is stamped "Copperweld."

COPPERWELD DROP WIRE

For uninterrupted service, string Copperweld – the strongest drop wire made. Its thick copper covering, Molten-Welded to an alloy steel core, assures excellent conductivity and long, stretch-proof life. No. 18 Copperweld Drop Wire, with a breaking strength of 400 pounds for the pair, has the ruggedness to withstand heavy ice and wind loads.

COPPERWELD GRIP-FLEX TIES

Reinforce the conductor over the entire length of the tie, combat fatigue, and assure uniformity of construction. These preformed ties are strong, non-rusting, simple in design, easy and inexpensive to apply. Copperweld Grip-Flex Ties are made for line wire sizes from .080" to .165".

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How to install, service and maintain . . .

2-WAY RADIO sets for top efficiency

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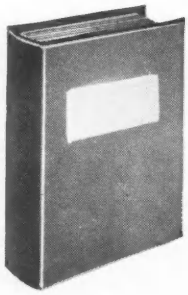
TWO-WAY RADIO



By ALLAN LYTEL

Avco Manufacturing Company,
Crosley Division, Cincinnati, Ohio

281 pages, 6 x 9, 283 illus., $9.50

HERE is a complete guide to two-way radio—from a description of a typical radio system and its many uses in business and industry, to technical information on transmitters and receivers, circuit details, selective calling methods, and methods of installation, trouble-shooting and repair. In a single volume, you have an introduction to the theory and practice of voice-modulated radio communications that covers mobile (vehicle) and base-station (fixed) radio transmitters and receivers, plus the related test equipment.

The book provides a logical, step-by-step study of the whole field, and covers both FM and AM systems. Newer types of AM, such as single sideband, suppressed carrier double sideband, synchronous AM, plus the use of transistors, are included together with illustrations that explain technical details.

Here is everything you need in order to work more effectively in this field—theory, practical installations tips and servicing procedures, and an outline of important FCC rules and regulations that must be observed.

The Complete System Outlined

The book describes in detail the two-way communications system, including installation details in both the base station and the mobile unit, the choice of frequencies available for broadcasting in both AM and FM, and such technical details as oscillator circuits, frequency multiplication, power amplifiers, amplifier circuits, limiters, and squelch systems. Tone selective calling codes, digital pulse codes, electromechanical selection, dial codes, and other particular features of two-way systems are also covered.

Gives Practical Servicing Help

Other practical chapters give help on planning and doing the work of installation, troubleshooting, performing preventive maintenance checks, and locating and eliminating sources of interference from electrical equipment within the vehicle.

Mail Your Order To

Educational Division

TELEPHONE ENGINEER PUBLISHING CORP.

7720 N. Sheridan,

Chicago 26, Ill.

"OBSERVATIONS"

(Continued from page 16)

they feel that they are entitled to essential medical aid at a reasonable cost. A small fraction of the money we waste on subsidies for farmers' overproduction and pay for Pakistanis would suffice.

The Forand Bill may be too socialistic, but continued neglect of the distress that Forand seeks to alleviate would invite more socialism.

Conventions vs Education Meetings

AT THE recent annual convention of the Communications Workers of America, the delegates debated a proposal to change to biennial conventions. It was suggested that purely educational meetings should be held in the alternate years.

The proposal was defeated; but it leaves us food for thought about our own doings. At our telephone association conventions, many of the education forums suffer from the competition of unprogrammed diversions. They are lucky if they muster a quarter of the attendance that the registration lists would indicate. A separation, such as that suggested to the C. W. A., might be worth our while to debate.

A Capital Offense

OUR industry's plans to change to "all number," 7-digit numbering systems now become urgent and imperative. An AP news item records that an assistant U. S. attorney in Washington, asked to call San Antonio Capitol 6-4211, enquired: "How does one make a capital 6?"

Videophone Horrors

A BAD DAY is coming for us liars. We have noticed that many of us can lie well and plausibly over a telephone, when our faces are not seen. Many of us have a different flair. We can lie well with our facial expressions but our spoken words betray us.

Few of us are effective when we try to lie verbally and facially at the same time. The coming of the videophone will be disastrous.

Interference Problem

THIS HAS been written under adverse conditions. A writer is supposed to have certain rights — no pun intended — such as freedom from interference while he is working. We are less than 50 feet from a little stream in northern Montana; and a lady beaver is hunting for her little one. From the bank we can see both of them: but the baby is behind a clump of reeds and Mamma is cruising to and fro, unable to make contact. Another inadequate communications system! We have to leave our work every minute or two, of course, to see how she is getting along. The Writers Protective Guild should do something about it. — *L. A. Gritten.*

WHICH JOB WOULD YOU TAKE?

If you're like most of us, you'd take the job with the more tempting salary and the brighter future.

Many college teachers are faced with this kind of decision year after year. In fact, many of them are virtually bombarded with tempting offers from business and industry. And each year many of them, dedicated but discouraged, leave the campus for jobs that pay fair, competitive salaries.

Can you blame them?

These men are not opportunists. Most of them would do anything in their power to continue to teach. But with families to feed and clothe and educate, they just can't make a go of it. They are virtually *forced* into better paying fields.

In the face of this growing teacher shortage, college applications are expected to *double* within ten years.

At the rate we are going, we will soon have a very real crisis on our hands.

We *must* reverse this disastrous trend. You can help. Support the college of your choice today. Help it to expand its facilities and to pay teachers the salaries they deserve. Our whole future as a nation may depend on it.

It's important for you to know more about what the impending college crisis means to you. Write for a free booklet to: HIGHER EDUCATION, Box 36, Times Square Station, New York 36, N.Y.

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INDUSTRY NEWSLETTER

REA Reports 1960 Telephone Loans Total $105,000,000

Farm telephone loans during fiscal 1960, at a new record of $105,000,000, will result in new or improved service to 180,856 subscribers, the Rural Electrification Administration estimated last month in a review of its activities during the year ended June 30. Included were loans to 47 new REA borrowers, bringing the total of REA-financed telephone systems to 494 commercial companies and 211 cooperatives in 45 states. The 1960 loans will finance the construction of 32,903 miles of new line, in addition to dial central offices and other facilities.

Regulatory Changes Sought In Indiana

In recommending drastic changes in the operations of the *Indiana State Public Service Commission*, Public Counselor *George L. Diven* has urged that the duties of the three commissioners be confined to hearing cases and handing down decisions. In a report to a state legislative study committee, he proposed that the 1961 state legislature set up an administrative division which would handle the actual running of the utility regulation department. Diven also would have the law specify that at least one commissioner must preside at all hearings and that evidence should be reviewed by the full commission before any decision is reached. He said the majority of cases presently are handled by hearing examiners.

"The commission," he declared, "cannot act properly as both judge and prosecutor. It now controls the technical staff which investigates the petitions for rate increases and therefore prepares the case it is expected to decide impartially."

The counselor said his proposed amendments to the law would limit the commission's decisions to the evidence introduced at the hearing, making it impossible for the commission to seek additional data to support a conclusion it desires to reach. Under his plan, the administrative division would be required to turn over its evidence to the public interest in all rate cases. To do this, he said his office should receive the reports of commission engineers, auditors, and accountants before a case reaches a hearing.

"My proposed amendments," Diven said, "would make the (commission) a judicial fact-finding body with no responsibility for the general operations of the office which would be handled by an administrative officer who would have nothing to do with the hearings."

Vermont Commission Changes Advocated

Public Administration Service of Chicago has recommended a major reorganization of the Vermont Public Service Commission including an "expanded and stronger staff." The recommendations came in a report of a week-long investigation of the commission undertaken in March at the request of Chairman Charles R. Ross.

The consultants recommended a "gradual revision" of Vermont statutes affecting powers and operations of the commission. They said a review of state laws showed a "patchwork pattern" indicating need for revision "with a view to the consolidation, simplification and clarification" of many of the laws. Ross, who earlier initiated some work along these lines, said he would prepare a program to be submitted to the 1961 Vermont legislature to bring many of the commission's laws up to date.

Please turn to page 22

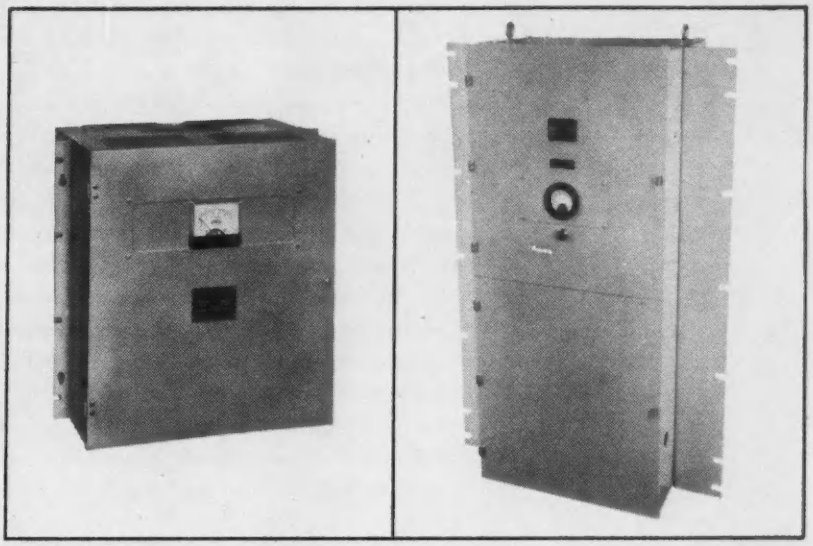
in the power field with Raytheon

Raytheon Company, Power Supply and Voltage Regulator Operations, Commercial Apparatus and Systems Division, Keeler Ave., South Norwalk, Conn.

RAYTHEON TELEPHONE POWER EQUIPMENT MEETS VARYING DEMANDS

Solving special telephone power supply problems is routine work for Raytheon's factory trained field applications and service engineers. From Raytheon's complete line of equipment covering all major needs, they come up with the answer that best suits your particular requirements . . . and make certain that your equipment is properly installed and serviced.

In telephone exchanges throughout the country, Raytheon Rectichargers,® Rectiringers,® Rectifilters® and other power supply equipments are in service around the clock. You'll find them in applications ranging from toll-ticketing power to main dial installations serving 4,500 terminals or more. FOR ON-THE-SPOT SERVICE, from the Raytheon Sales and Service Office nearest you see the YELLOW PAGES or write to the address at right.



TYPICAL UNITS in Raytheon's broad line of modern battery charging equipment are this 18-amp., single phase, silicon Recticharger (left) and 25-amp., three-phase, silicon Recticharger (right).

NEW RAYTHEON BATTERY CHARGERS SMALLER, LIGHTER, MORE EFFICIENT

Raytheon's improved line of battery chargers now employ reliable silicon semiconductors for greatly improved rectifier efficiency. The thoroughly tested models are up to 50% smaller and lighter than comparable selenium units.

Typical Rectichargers shown above maintain batteries at full charge under all load conditions, and at the same time supply the full power requirements of the load. Output filtering reduces ripple to 30 millivolts, well below the audibility level. Output voltage is precisely regulated to within ± 1% from no load to full load and for line changes to ± 10%.

Raytheon telephone applications engineers are ready to demonstrate how Raytheon closely regulated battery chargers can bring longer battery life and significant reduction in battery maintenance to your installation. For information or engineering assistance, please write Raytheon Company, Power Supply and Voltage Regulator Operations, Commercial Apparatus and Systems Division, Keeler Avenue, South Norwalk, Connecticut.

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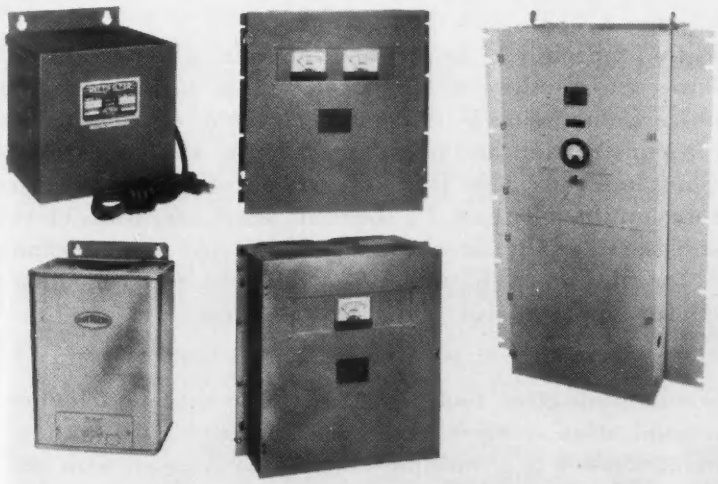

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INDUSTRY NEWSLETTER

(Concluded from page 20)

Agree On Utah Utility Line Relocation Costs

Lawyers representing the state of Utah and utility companies agreed to a plan for meeting a State Highway Department problem of who should pay for relocation of utilities when highway projects force pipelines, power lines and telephone lines to move. The issue stems from a 1957 law passed by the state legislature and the 1956 Federal Aid Highway Act. Constitutionality of the state law was upheld by the State Supreme Court. It earlier had been ruled unconstitutional by the state attorney general.

The law provides that the state shall participate in the costs of relocating utilities where the federal government contributes its share of the cost. State and company counsel agreed orally on how to determine whether the utility or the state shall pay for relocation, as follows: On utility lines authorized before May 14, 1957, the effective date of the 1957 act, any subsequent realignment shall be paid by the utility if that was part of the original agreement; on utility lines authorized before May 14, 1957, but where the agreement was silent on relocation costs, the state will pay; and when permits for installation of utilities have been issued after May 14, 1957, the state shall pay for relocation, as long as the federal and state laws are in effect.

News Highlights

Oswego County Tel. Corp., Fulton, N. Y., closed $500,000 25-year, first mortgage loan with Berkshire Life Insurance Co., Pittsfield, Mass. and Connecticut General Life Insurance Co., Hartford, Conn. . . . *Farmers Mutual Tel. Co.*, Clarinda, Ia., closed $150,000 25-year, first mortgage loan with Berkshire Life Insurance Co., Pittsfield, Mass. . . . NARUC President *George R. Perrine* has announced appointment of *P. M. Schuchart* staff member of Pennsylvania Public Utility Commission to NARUC Committee on Depreciation. Schuchart was member of Committee while with Florida Commission . . .

In California, *Everett C. McKeage* has been re-elected president of Public Utilities Commission . . . *Harold F. Clark*, assistant director of Rural Electrification Administration's Western Area-Telephone, has been named director. He succeeds *William W. Newman, Jr.*, who has joined federal government's missile program. Clark will be responsible for work with REA telephone borrowers in 13 western states.

Sale of *Union Tel. Co.*, Smackover, Ark., which operates about 2400 telephones in seven exchanges, to Southwestern Bell Tel. Co. has been approved by Arkansas Public Service Commission . . . *General Tel. Co. of Florida* plans to spend $67,000,000 in construction and plant expansion in 1960 and 1961—more than value of plant in service after first 50 years of company's existence. Expansion program was outlined by Carl D. Brorein, Jr., General of Florida operating vice president, at ground-breaking ceremony for new exchange building. Budgeted for this year is about $30,000,000, and remainer is tentatively scheduled for approval for 1961, Brorein said.

New Communications Tool

A new business communication tool, the "Call Commander" telephone, and new intercommunication services have been announced by Automatic Electric Co. Call Commander is a multiple telephone equipped with maximum of 18 pushbuttons for outside line and intercommunicating service. Pushbutton operation also will hold up to 17 central office or private branch exchange lines. Selective signaling is provided for up to 36 intercom stations; preset conference service is offered, whereby six people will be called simultaneously by either dial or pushbutton.

Graybar announces

an IMPROVED TRANSISTORIZED REPEATER-AMPLIFIER

...made by Lynch

The new Repeater-Amplifier made by Lynch will plug into standard relay rack mountings . . . delivers more gain, more stable circuitry and better performance than any comparable repeater.

STEP UP PERFORMANCE WITH THESE EXCLUSIVE FEATURES

- **Provides highly stable output regardless of temperature or supply voltage fluctuations . . . . 15 db feedback steadies circuit performance.**
- **The Lynch amplifier gives you high gain . . . up to 38 db.**
- **Operates at high ambient temperature . . . the Lynch amplifier works at full power at 140°F. as easily as at 70°F.**
- **Improves audio performance . . . harmonic distortion is only 0.5% at + 10dbm, 300 to 4000 cycles.**

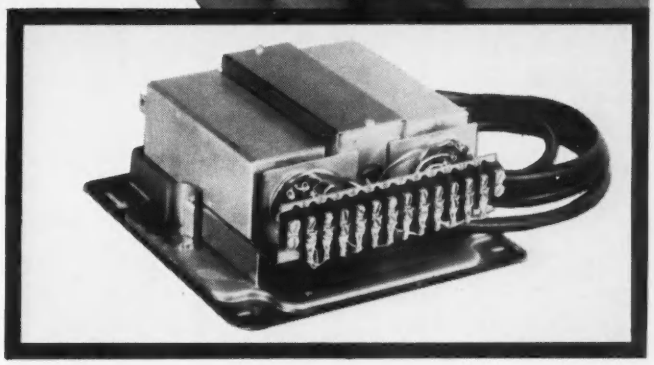
TRIM COSTS ALL ALONG THE LINE

You'll save . . . because the Lynch transistorized repeater eliminates the need for 130 volt power supply. It works on as little as 12 volts, so is easily adapted to the 24 or 48 volt filament supply used by old type vacuum tube amplifiers.

No need to install DC power for smaller installations, since the repeaters are available with a special rectifier unit utilizing 117 volt AC.

You'll cut maintenance costs . . . because the new Lynch Amplifier is designed and manufactured to serve for years without attention. Circuits are printed on tough epoxy fiber-glass. It features a trouble-free standard-size gain control. Diode circuit protects transistors from reverse polarity.

You'll avoid ventilation costs . . . for the transistorized Lynch Amplifier does not generate heat.



AC Power Supply shown between two Amplifiers. Entire assembly may be mounted in #105 apparatus box. Mounting facilities and accessories are manufactured for all types of installations.

Send for New Bulletin—Lynch makes the standout repeater amplifier for remote or central locations. Graybar distributes it nationally. Send today for descriptive bulletin.

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Power equipment created by Lorain..."milestones" in the telephone industry ...is engineered and built in these four plants.

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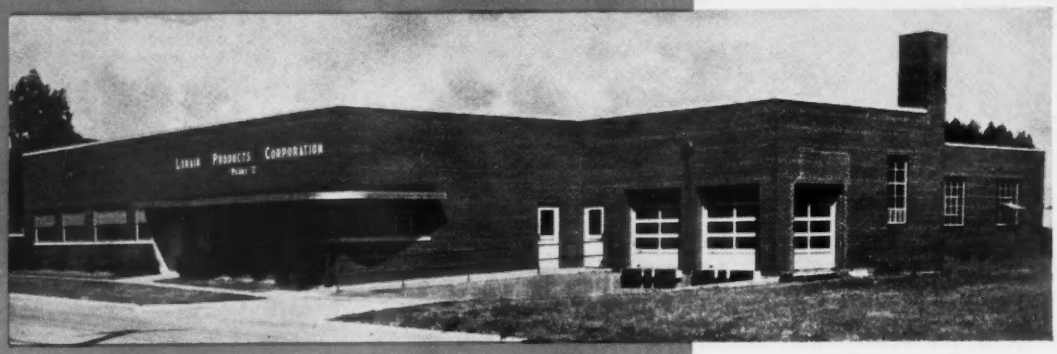

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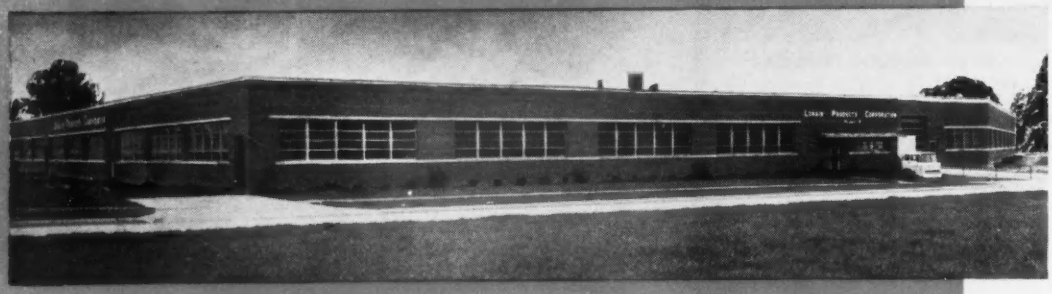

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LORAIN, OHIO
GENERAL PRODUCTION
TRANSFORMER PRODUCTION

PLANT No. 4
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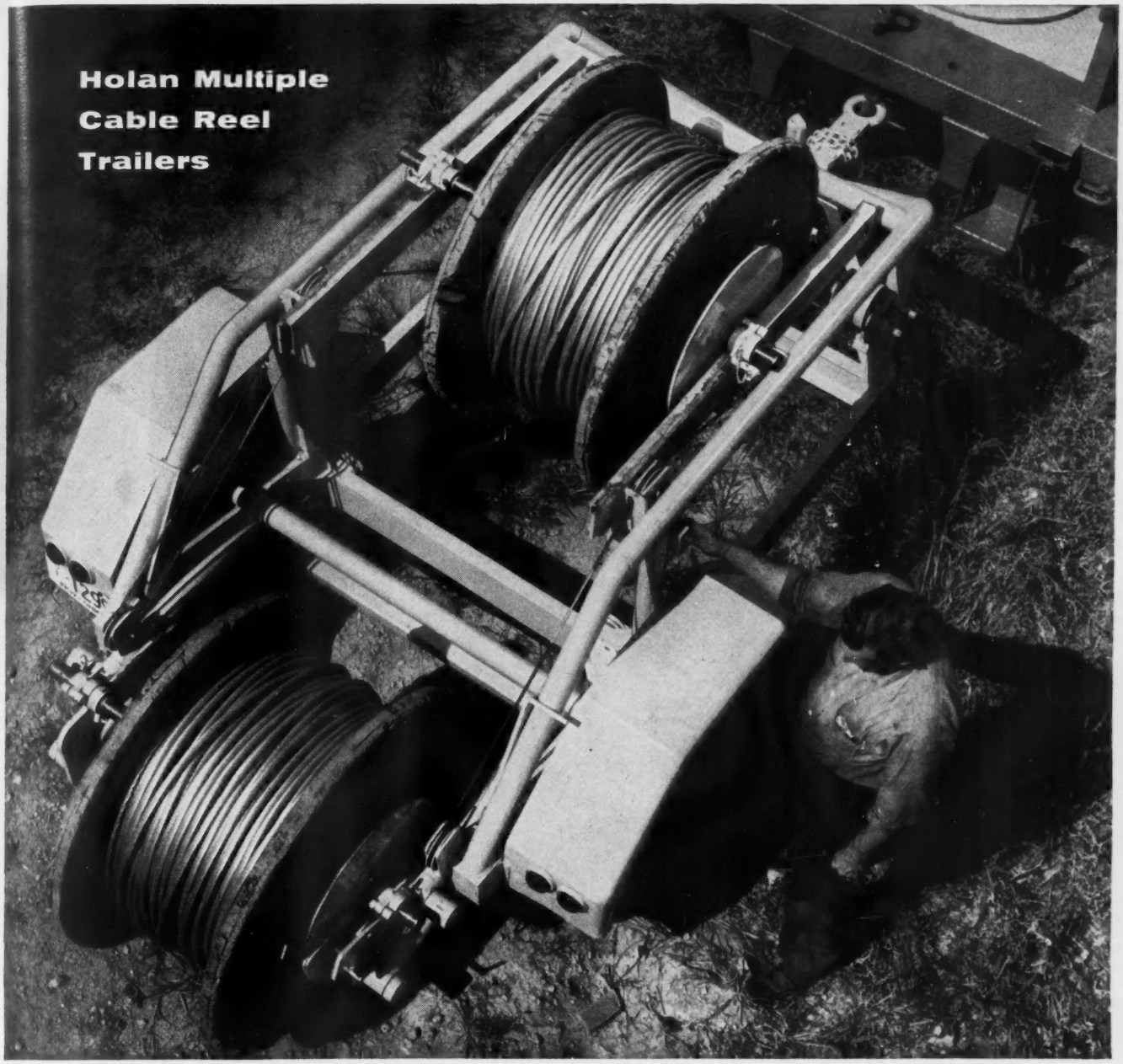

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Holan offers a complete line of 1-, 2-, 3-, and 4-reel trailers —all incorporating the same design features that assure safe, fast, economical operation by one man.

Pickup arms lower to within 12″ of the ground, handle reels as small as 24″ and as large as 54″ without any special attachments and without any heavy lifting by the operator.

A pushbutton controlled electric winch or hand winch lifts the reel into place. Both are located away from the hoisting mechanism, thus assuring that the operator stands clear of the reel while loading and unloading.

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Exclusive 22″ electric disc brakes eliminate overspin, give positive braking action, and provide tension for reconductoring.

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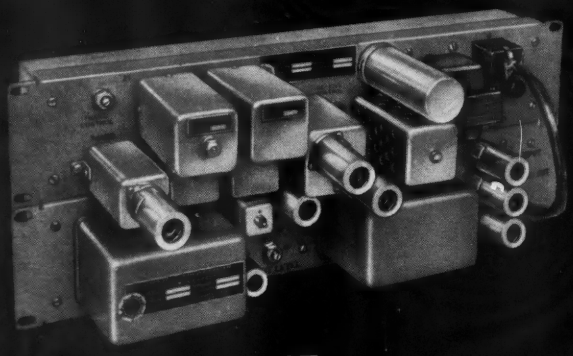

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ADDITIONAL
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LINES

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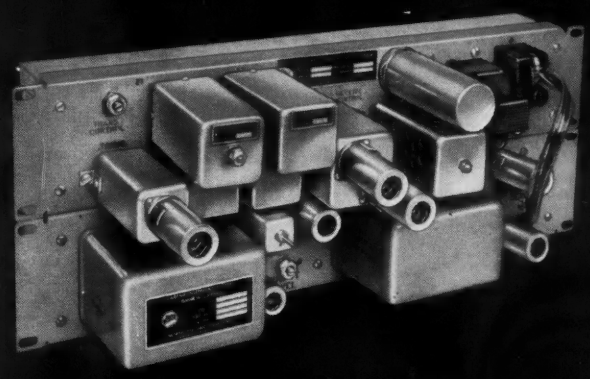

You can provide service for new subscribers adjacent to lines now filled—reach new subscribers beyond present lines—free physical circuits for pay station or other special revenue service—meet demands for special temporary service—offer improved service to subscribers on overcrowded lines!

Talk to your North Carrier Engineer. Let him show you how North NS-102 Divided Ringing Carrier or North NS-101 Bridged Ringing Carrier can improve your subscriber service immediately without the financial burden of physical line construction.

North Subscriber Carrier is low in initial cost, easier to maintain thanks to North's simplified circuitry and embodies many improvements engineered to help make your operation more efficient and more profitable.

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Welcome your North Carrier Engineer—he's there to help you—he proudly represents

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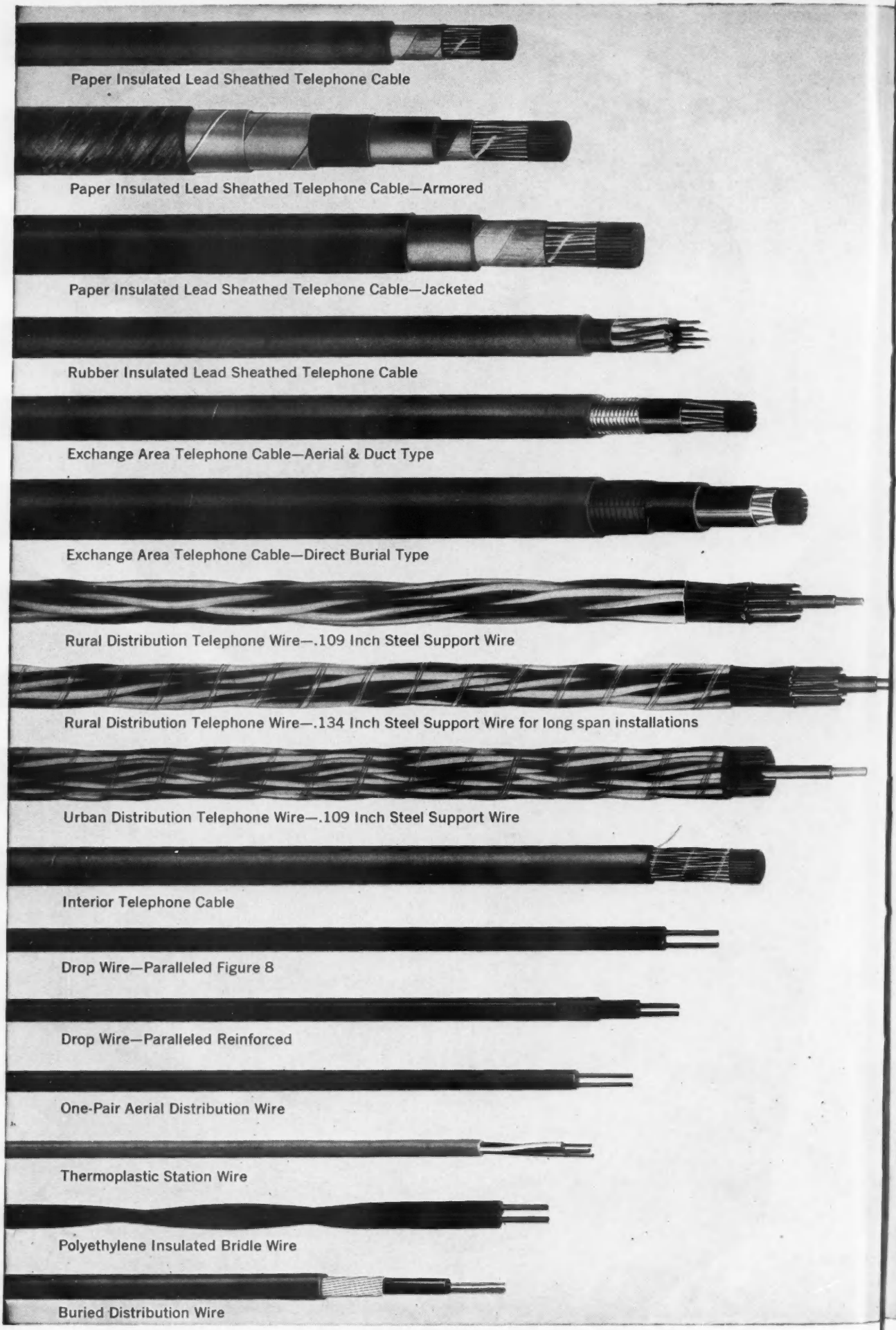
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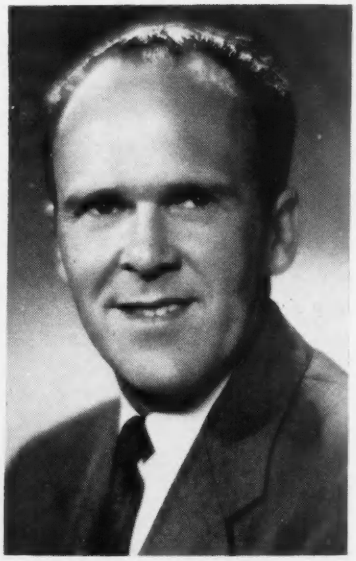
INDUSTRY VIEWS

"That's great! There'll be no need for letters from Mama now," exclaimed CLIFF ARQUETTE (Charley Weaver of the Jack Paar Show) as he completed the first DDD call from Gettysburg, Pa. The call was placed from Arquette's Soldiers' Museum in Gettysburg. Arquette dialed and spoke with his mother in San Francisco, Calif. United Telephone Co. of Pennsylvania's District Manager JOHN CALDWELL (left) was an interested participant in the first call festivities. Gettysburg, Hanover and Chambersburg, Pa., are now served with XY Toll Ticketing; another group of exchanges will soon be given DDD service through the Bedford system.



BERT L. STEELE has been appointed director of personnel for GT&E Service Corp., New York City, according to Thomas A. Boyd, executive vice president-administration of General Telephone & Electronics Corp. Formerly personnel administrator for GT&E Service Corp., Steele replaces Marshall K. Taylor, who was recently elected president of General Telephone Co. of Upstate New York, Inc. Steele joined the General System in 1949 as personnel assistant for General Telephone Co. of Pennsylvania.

"Morality in Public Office" was topic chosen by the Honorable EVERETT C. McKEAGE, president of the California Public Utilities Commission, in his address at California convention. DONALD STRAHL, 1959-60 president, is at his right.

Enlightening talk on our air defenses was presented at California convention by Major General JOHN D. STEVENSON, U. S. Air Force Commander, Western Air Defense Forces of Hamilton Field, Calif.

"The Golden Decade Is Here" says FOSTER B. McHENRY, USITA president, in speaking to New York State Telephone Association Convention.

ALBERT N. SEWARD of Jamestown opens the recent convention of New York State Telephone Association.

Beaming, as he should, ROY STAFF of C & D Batteries proudly displays the 20 lbs. 6 oz. lake trout taken from Schroon Lake while other New York State Telephone Association Conventioners were playing golf.

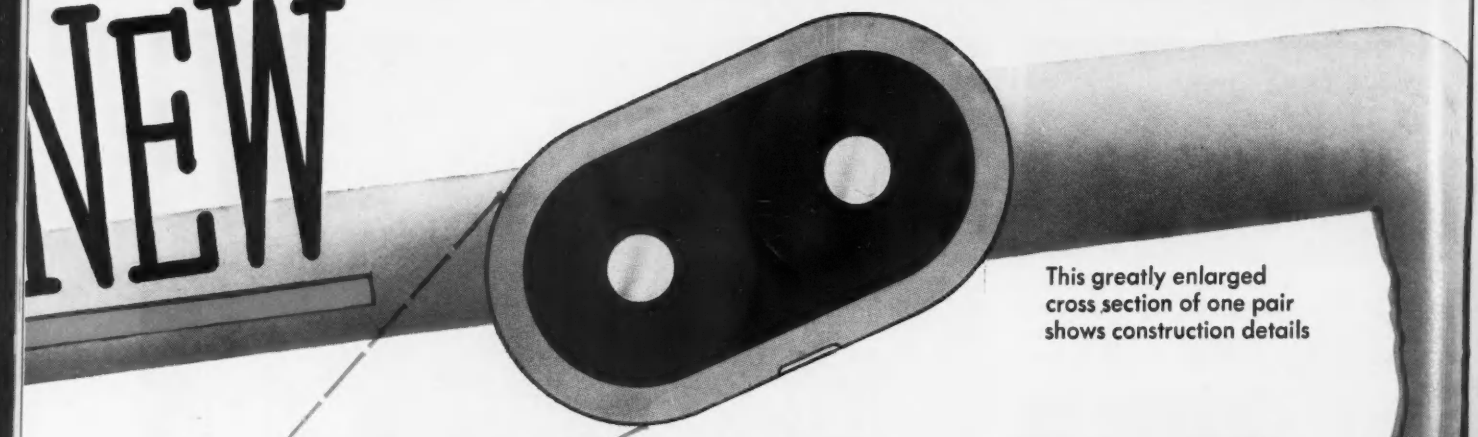
C. RAY LLOYD, treasurer and general manager of Midstate Telephone Co., Inc., past-president of New York State Telephone Association and chairman of the association's hard-hitting Intercompany Operations Committee, explains the new EAS settlement agreement with New York Telephone Co.

Convenience, efficiency and speed of Direct Distance Dialing being explained to PBX attendants at Hanover, Pa. (United Utilities System) prior to introduction of 3 D service. FREDERICK SPECHT is the moderator.

A new $168,000 general office building was recently dedicated by Coachella Valley Telephone Co., Indio, Calif. Mayor James J. O'Brien declared "Indio Telephone Day" to mark the rapid growth of the company and invited citizens to tour the 5500 sq. ft. building. Organized by a handful of pioneers in 1906, the company now serves 10,508 subscribers. Plans are now under way to spend nearly $1,250,000 on plant expansion and construction, according to J. Curtis Newman, president. Coachella Valley Telephone went dial in 1927, and joined the nationwide Direct Distance Dialing network in 1957, with the installation of Strowger automatic toll ticketing equipment.

Shown at ribbon cutting ceremony for dedication of Coachella Valley Telephone Co.'s new general office building are (l. to r.) J. CURTIS NEWMAN, Coachella Valley Telephone president, Councilman WALTER WRIGHT, Mayor JAMES J. O'BRIEN, Councilman F. R. THOMPSON, and NORMAN FITZHENRY, Chamber of Commerce president, all of Indio, Calif.

NEW



This greatly enlarged cross section of one pair shows construction details

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Will serve you longer . . .will provide the true economy that high quality always gives.

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- ★ **TOUGHNESS** — Withstands unusual physical abuse.
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- ★ **EASY PAIR IDENTIFICATION** — Single, two-color jacket codes individual pairs.
- ★ **EASY ACCESS TO PAIRS** — In all pair sizes each pair appears on the outside at frequent intervals.
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High density polyethylene insulation . . . Extra-heavy wall thicknesses . . . Fully color-coded common jacket over each pair.

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Only the K-500 offers independents such built-in acceptance and recognition in a telephone—*plus* setting the standard for all others in reception and transmission.

K-500s come in both standard and sought after wall models, in eleven bright, sparkling colors that housewives love. And whatever the color, whatever the model, the K-500 represents your best and most dependable source of revenue.

Ask your Kellogg representative to help you work out a money-saving monthly shipping plan geared to your needs . . . and to show you the low-cost promotional materials available for your use.

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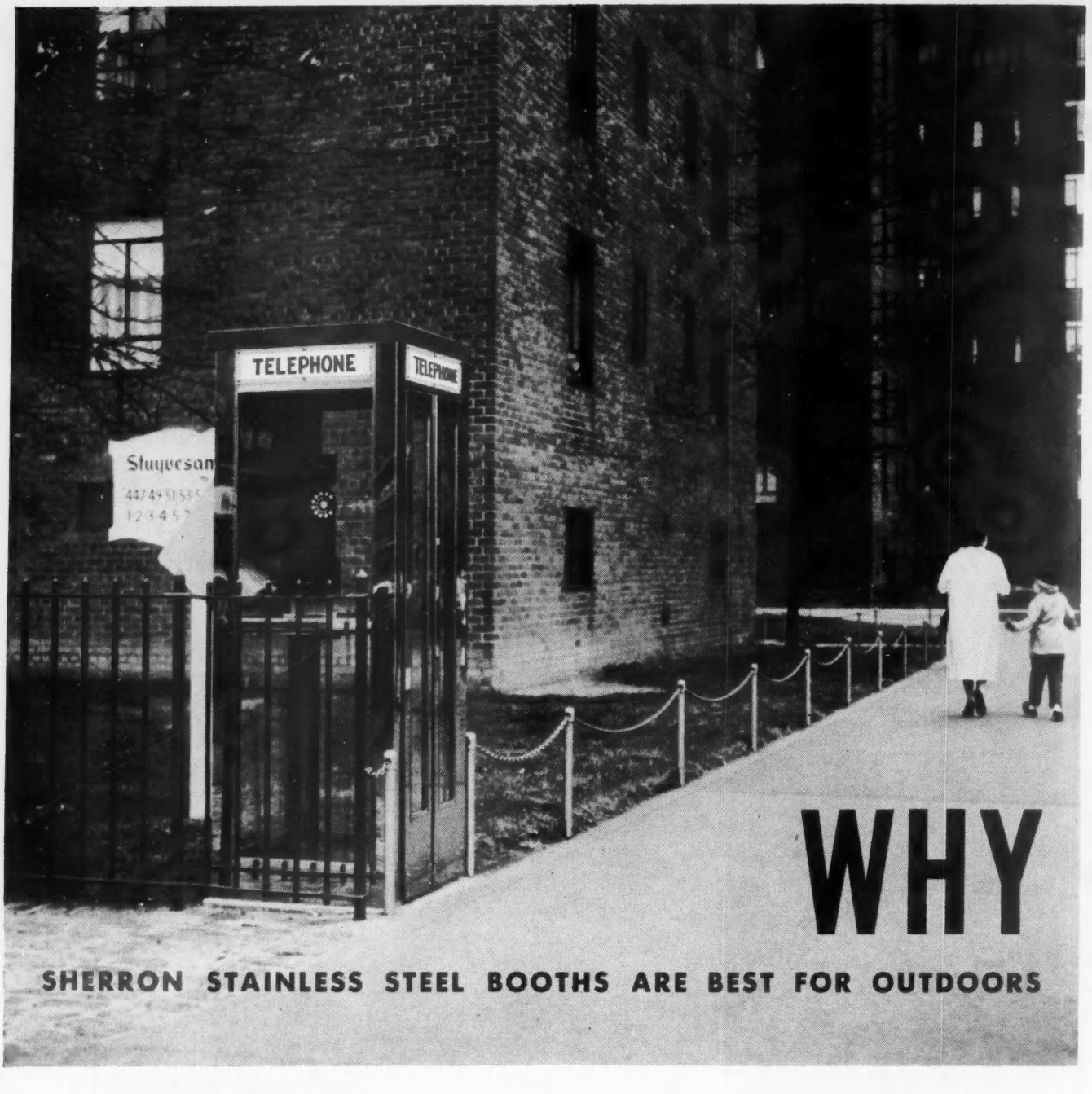

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EDITORIAL

EAS—An Industrial Challenge

WE'RE old enough to remember that period in the history of our country when each community was compact and well defined. In those days it was possible to pass a sign reading "City Limits" and drive for miles before coming to the "City Limit" sign indicating the beginning of the next community, which was a fairly well-developed area composed of people having strong community of interest, beyond which they had little desire to communicate.

In those days of the past, when a telephone subscriber made a call to a nearby community by telephone, he considered it a "long distance" call and the telephone company charged him for the service.

However, things have changed, and today it is apparent that *the public wants a new form of service between communities.* In fact the records prove that subscribers in nearly every section of the country are requesting area service (EAS), and in some cases demanding flat rate, "free," service where once toll charges were assessed.

There are many reasons for the demands subscribers are now making. Cow pastures which were previously a home for the nation's milk supply are now the site of new tracts providing housing for hundreds of families. As the land between communities fills, city limit boundaries become of little significance to the telephone user. Where the telephone industry many years ago drew an arbitrary line and said that local service shall be provided up to this point and calls over this line shall be placed at toll rates, neighbors are now looking at each other over their backyard fences. Likewise, shopping centers that used to be "toll call distance" away are now only 10 minutes drive by automobile.

We well know that provision of EAS service is technically easy with today's modern telephone switching equipment. However, we also know that when two telephone companies are involved in joint provision of EAS, as they often are, *a new problem arises — that of intercompany settlements on flat rate, "free," traffic.*

There is nothing mysterious about the problem. It comes into being because the telephone calls between the two communities were previously charged for and handled as toll traffic with an individual price for each call. Now, this traffic becomes flate rate and when this comes about there is a revenue drop to both companies because of the loss of toll charges, and the loss must be made up either by a revision in the method of settlement on interchanged traffic or by increasing the local service charges to the subscribers, or by a combination of both.

This trick is hard to perform as *it is not always possible to increase local service rates sufficiently to offset the toll revenue loss.* When there are a large number of subscribers over which to spread the local service rate increase, the increase can be nominal. However, when there are only a few subscribers the size of the rate increase becomes more than the public is willing to pay.

Therefore, it is plain to see that *the matter resolves into an intercompany settlements problem.*

The entire problem is pointed up by a recent decision (dated May 6, 1960 in Case No. U-8988) of the Washington State Public Utilities Commission. In discussing the intercompany settlement disparity resulting from the joint introduction of EAS service by two companies, the Commission said, "*Unless such is done*" (referring to a recommended settlement treatment for interchanged EAS traffic) "*we have the anomaly of one company to a partnership undertaking being penalized while the other party gains thereby and the only major fact causing such is the substitution of interexchange flat rate service for interexchange toll rate service.*"

It seems to us the problem of equitable EAS settlement now lies squarely before the telephone industry and the Commissions. The facts prove the public wants EAS service, and any close study of the problem will indicate that the telephone industry must develop a settlement method for use in filling this public need in such a way that fair treatment is accorded both the telephone companies involved and their ratepayers.

In our opinion the telephone companies should not wait for the Commissions to do this for them. The operating segment of the industry must find a mutually agreeable solution and find it now.

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"We're in business not only to provide good telephone service, but to provide it in such a way that we make money."

PROFIT and the TELEPHONE BUSINESS

By HAMILTON A. CUNNINGHAM*

Executive Secretary, New York State Tel. Assoc.

A FRIEND of mine recently asked a question that I'm certain is typical of what you folks must hear from day-to-day. "Why," my friend demanded to know, "Why does a telephone company need higher profits? You're a public service. And besides, you're a monopoly. You don't have any competition."

Even though profit is one of the most important factors contributing to the growth of our economy, it's pretty evident from this question that my friend — as so many others we all know — just doesn't have any notion of how essential profit is to a business like ours. Nor do these people realize that profit benefits our customers, our communities, the state and the nation.

Many of these people conclude that any profit above a bare minimum is a bad thing — that it takes away from everyone else's share. We know they're wrong! Dead wrong, because actually, the reverse is true: good profits can make everyone's share bigger!

I'm afraid we're partially to blame for the miscon-

**Mr. Cunningham presented this paper at the 1960 convention of the New York State Telephone Association.*

ceptions that stand in the way of our achieving good profits. Some of us have been too close-mouthed about profit — too hesitant about letting others know how badly we need good earnings. Perhaps many of us have been ashamed to admit we're in business to make a good profit.

Personally, I think it's time for us in the telephone industry to stop apologizing! Instead we should start putting greater emphasis on the need for more reasonable earnings for telephone companies.

We ought to set things straight, right from the beginning, with people such as my friend. We're in business not only to provide good telephone sevice, but to provide it in such a way that we make money! And we need more than just enough to get by — we need profits substantial enough to permit us to grow and to improve service — profits comparable to earnings of firms in non-regulated industry. It costs very little more to go first class; and, a first class telephone company can't have second class earnings! Given a good profit, in the long run we'll be able to give better service at a low cost.

Nowadays, our need for a good profit is greater than ever if we are to meet growing competition and increasing public demands.

Plenty of Competition

THE IDEA of competition for a telephone company may surprise some people, and even some of you — but I think you'll have to agree that your company is no longer the monopolistic public utility it once seemed to be. True, you supply a basic service, but more and more your company can be likened to a competitive enterprise.

Actually we've never been without some competition in our business. But now it's reached the point where competition is more vigorous, more demanding, more challenging, than we ever dreamed could be possible. In fact, the future of the telephone industry may depend upon how well we measure up to this new challenge.

Your company is, or should be, competing vigorously in several ways.

Some of them are rather obvious. You compete with all industry for labor. You must pay good wages to attract and hold outstanding people to operate and to manage your telephone business. You also compete for capital. Investors won't be interested in your company if they know they can get more for their money elsewhere.

Less evident, though, is the fact that your company is competing for a greater share of the consumer's discretionary spending dollars — the money he has left over after meeting monthly bills and buying basic necessities.

There's more of this money today than at any time in our history. Our standard of living being what it is, the market place is crowded with attractive products and services of all industries to lure a portion of the consumer's dollar.

For quite a while, we had it fairly easy. We didn't have to sell many people on the idea of putting in a phone.

Today, however, about eight in every 10 American households have phones and our future would be limited indeed if we were content with merely supplying basic service. We've recognized this fact and we've been widening our field of operation.

Some of the new products and services we've been coming up with are not necessities by any means, yet they find a ready market because they enrich the lives of our friends and neighbors. They meet the desires created by our economy.

In selecting the products and services he'll buy, the consumer exercises a choice. Price is only one dimension of value to him. Quality, style, dependability and variety are also important. Captains of industry know this. The result is total competition — competition that goes far beyond price alone. The business that fails to compete on all fronts is not doing all it should to help the economy. It inevitably falls by the wayside.

"It costs very little more to go first class — and a first class telephone company can't have second class earnings."

The successful company, on the other hand, keeps abreast of its customers' wants. The consumer expects new products today and the company that is able to provide them attracts a greater share of those extra dollars that are waiting to be spent. This company is able to grow faster, too. It helps itself by helping the customer and earns its reward in higher profits!

All right, then, we can agree we're going to compete heavily. But do let's remember that in the consumer's search for places to spend his money, your color telephones, extensions and the like are competing with hi-fi sets, power lawn mowers and new refrigerators.

The New Competition

TELEPHONE companies face competition of other sorts too. More and more firms in American industry are manufacturing and marketing communica-

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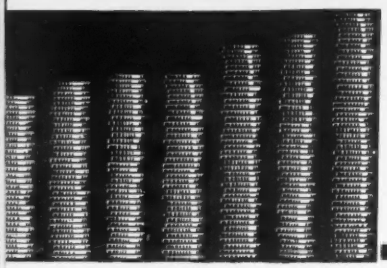


PROFIT and The Telephone Business (continued)

tions equipment and are supplying services similar to our own. The private microwave networks going up across the nation are a good example of the new kinds of competition we're encountering.

There was a time when this kind of activity was the exclusive concern of the telephone business. Now, however, almost every field of communications beyond the basic interconnection of telephones seems to be fair game for companies outside our industry. Ironically, it's been some of the very developments and advances of our industry that's making this competition possible.

Admittedly, the products these firms offer are good; they can offer the public much. Even though telephone companies are supposedly non-competitive, we are now being asked to match our own products directly with those of businesses whose very existence depends upon successful competition.

We must ask ourselves: Can we meet this challenge?!!

One thing is sure. Americans are never satisfied with the status quo. The best today can only mean desire for something still better tomorrow! You will be confronted by demands for new and better communications equipment and services. These needs will be — in fact, must be — satisfied, if not by you, then by someone else, perhaps by some other industry.

There is no room in the telephone industry for complacency! We simply cannot afford to stand still in the face of these competitive pressures! To keep pace we must continue to expand, to improve service. We must meet new demands promptly and we must seek out better ways to serve our customers. We must compete with non-regulated industry — and we must do it on an equal footing — or your company and the rest of the telephone industry is in trouble.

"A good profit today will lead to better telephone service tomorrow . . . profit, progress and performance are inseparable."

The Need For Profit

WHAT this means is that in order to compete effectively, we've simply got to have the profits that will enable us to do so. Profit is the key to our survival in a competitive market.

Profit means research and development!

Profit means more and better paying jobs!

Profit means improved service!

In fine, profit means a vigorous company in a sound economy.

But our hands are tied — tied by regulation that fails to act as a true substitute for the forces of competition — regulation that focuses on immediate price and profits alone. We have, in fact, restriction, rather than regulation.

Don't take me wrong! I'm not advocating the elimination of regulation. Far from it. Regulation of our industry is worth while because competition between similar indispensable utility services in one area would be wasteful of our national resources and manpower, unworkable and inconvenient for the public.

What I would like to see, however, is a new public climate — one that recognizes the change in economic and social conditions since the ground rules for regulations were established many years ago — one that realizes that regulatory policies must keep pace with the changing times. Most of the same pressures and checks that confront ordinary manufacturing concerns also affect regulated companies. And regulation doesn't guarantee a fixed profit — or even any profit at all. One of four leading airlines, for example, is on the verge of bankruptcy, even though that company is an important part of a growing industry.

We shouldn't have to point out to the public and to regulators that a good profit is essential to progress in any business. Our customers are clamoring for more for their money, not just the same for less. They deserve improvements in service and better products from telephone companies as much as from any other business enterprise. But if we want to do the dynamic job that is so characteristic of successful businesses generally,

Please turn to page 61

SUB-HARMONICS and OVERTONES

By C. D. EHINGER
Pres., Citizens Telephone Co., Decatur, Ind.

THE KID LEARNS ABOUT FEEDBACK APPLICATIONS

The Kid takes his question to Chuck and gets some answers on positive and negative feedback.

FOR SOME reason or another this just wasn't the Kid's day. Somewhat morosely he jammed some tools into his pockets and prepared to go back to the bank-cleaning job which he had started.

The whole day had started off on the wrong foot. At his home, the Kid had skipped down the stairs all set for his usual "light breakfast snack" of orange juice, a heaping bowl of cereal, three eggs — over lightly, with a half dozen strips of bacon, his usual three or four pieces of toast and jelly, all washed down with a few cups of stiff coffee. The Kid had nonchalantly sat down to the breakfast table by his usual process of enveloping a chair rather than sitting on it, when his mother had informed him that it was "pancakes" this morning, rather than "bacon and eggs."

The Kid prided himself on being able to face such major changes — besides, four or five good, big, pancakes with lots of sausage might hit the spot and hold him fairly well until time for lunch. It was then that things started going wrong for the Kid. No sausage! To the Kid, this was a major catastrophe — he never seemed to be able to satisfy his prodigious hunger, and besides — whoever heard of pancakes without sausage?

And how about that jerk on the bus — the Kid mused to himself. He had boarded the early morning bus for his usual ride down to the central office, and had spotted the one vacant seat remaining.

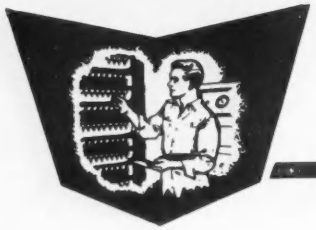
He had started to make a beeline for the seat when, out of the corner of his eye, he saw an older lady also bearing down majestically on the seat. Instinctively, he had halted to allow her to take the seat when, out of nowhere, some other man had quickly, quietly, efficiently, and with finality, taken the seat, opened his paper, and had become lost to the world. The Kid, and several other passengers, had managed to survive a standing ride down to the center of town.

"To Top It All Off"

IN REALITY, the Kid was thinking of these things in an unconscious effort to keep from thinking of the *final blow*. Not over 15 minutes ago, he had spotted the new girl moving over toward the drinking fountain. She had been working for the company about a week and was in the billing department and, in the short space of a week, the Kid had become very much aware of the commercial functions of a telephone company.

The Kid had taken a quick glance around to see that no one in the central office was watching and had decided that this was a good time to also get a drink of water. As he stepped through the doorway from the equipment room to the hallway, busily thinking of some of the smart repartee which he would use to impress the new girl, his foot caught on the doorstop and he made a perfect three-point landing on the terrazzo floor, skidded about three feet on knees and hands, and stopped at the base of the water cooler.

The Kid's face again flushed fired as he thought about the incident. The thing that really burned him up most was the inane remark that was all he could think of to say, as he picked himself up and looked at the new girl, standing there with her mouth slightly open. What in the world had made him say "Darned poor weather we're having," and then



The Kid Learns About Feedback (continued)

quickly beat a retreat down the corridor and around the corner?

The Kid angrily resumed his bank-cleaning chore on the second selector switches of the Centerville exchange. For once, he didn't mind this job nearly as much as he had previously. Jim Desmond had asked him to try out the new bank-cleaning unit which allowed him to clean ten levels at one time rather than one level at a time as they had previously done.

As far as the Kid could tell, the new method was working out like a charm and only required a little practice to get the hang of it. Just then Chuck Parr poked his head around the end of the equipment room aisle — "Say, Kid, I'm taking my coffee-break now; have you had yours, yet?"

"No, I haven't, Chuck, but I've just now started in again on using this new bank-cleaning tool."

"Well, drop it, Kid, and come along with me. Chet and Bill aren't here this morning and I don't want to drink my coffee all by myself, even if I have to sit and look at your ugly mug" — Chuck grinned.

"Swept Off His Feet"

THE KID put down the tools and followed Chuck into the company cafeteria. As they picked up the coffee cups Chuck looked at the Kid out of the corner of his eye — "Hear you worked out a new approach on the girls in the office."

The Kid perked up his ears and was instantly on the defensive. "What d'you mean?"

Chuck leered at the Kid. "The way I hear it, you've worked out a method of throwing yourself at their feet, nowadays."

The Kid's flush began all over again. "Doggone it, Chuck, how did you hear about that?"

Chuck laughed "You should have learned by now, Kid, that everything that happens around this building is soon known by everyone else, except maybe the Boss I guess it relieves the monotony, or something. But don't let it get you down, and I'll even change the subject for you. How are things comin'?"

"Oh, all right, I guess, Chuck. How are you and the ham gear doing? Been putting much time on ham radio, lately?"

"Not too much, Kid — the 15 meter band has been pretty dead lately and since that's my favorite band I just haven't horsed around with it much. How are you coming with some of your projects?"

"Well, Chuck, maybe you can help me out. I'm stuck on another one of these things that I always bump into."

"What's bothering you now, Kid?"

"Well, I keep bumping into this 'feed-back' item. In fact, I read somewhere the other day that feed-back applications seem to be coming into just about everything in the electronics field. I know I keep reading about 'positive' and 'negative' feed-back, and I find it referred to in oscillators, repeaters, precision meters, my hi-fi amplifier, and about anything that I seem to get into; but for the life of me, I don't have the slightest idea of what they're talking about."

Chuck looked at the Kid. "Well, Kid, I really don't see why it bothers you so much; feed-back is actually just what the word says. It can be applied to mechanical devices as well as to electronic pieces of gear but, in electronics, all that feed-back means is taking a certain portion of the output of any device and 'feeding it back' into the input of the device. We take the energy from the 'tail-end' of the unit and stick it back into the front end. In fact, there is such a thing as 'short-tailed' and 'long-tailed' feed-back which is only indicating how far we actually feed back the portion of the output signal."

The Kid spoke up: "You aren't saying anything that helps me, Chuck. Talk about a simple amplifier and show me what you mean."

"Not Always For Voltage Gain"

CHUCK drew out his ever-present paper and pencil. "Well, first, Kid, as you probably know, amplifiers can be designed to give power amplification, or voltage amplification, or current amplification. Incidentally, that's another thing that most beginners don't think about. They usually think that an amplifier is only designed to give maximum voltage gain, which may or may not be the case. A good example is a voice-frequency repeater. In such a case we certainly aren't trying to get maximum voltage gain; we are actually working toward *power amplification* and not *voltage amplification*. But, that's beside the point; let me draw you the fundamental outline of a simple, three-stage triode amplifier terminated in an output transformer" (*See Figure One, page* 43.)

"Now, Kid, on this sketch I'm leaving out everything but the bare fundamentals and I will show a small sine-wave voltage input to the grid of the first tube. By the way, Kid, I always find it a lot easier if I go through each stage and then show the phase relationship at each stage point. For instance, at the plate of the first tube the sine-wave will be 180° out of phase with the input voltage while at the cathode of the first tube it will be in phase. At the second stage the phase relationship is just reversed, and again, complete reversal occurs at the third state and the output transformer again reverses the phase relationship. Now at the output terminal of the transformer I should have a much higher voltage

than the input voltage and, in this particular case, it will be in phase with my small input voltage."

Chuck continued: "Now, let me tap on to the output terminal and go through a resistor which I will call R_3, bypassed by condenser C_1, and bring it clear around to the input of the amplifier."

The Kid interrupted "Would you call that 'long-tailed' feed-back, Chuck?"

"Exactly right! If I had only brought it back to the second stage, or the third stage, we would normally call that 'short-tailed' feed-back, but this is all the way, so it is called 'long-tailed'. Now, what would happen if I'd put it into the grid of the first stage or, in other words, connected it to point A?"

The Kid thought awhile. "Well, let's see — you would be adding a voltage that is in phase with the input voltage — which would be amplified some more — come on back and again aid the input voltage — H'mm. I guess the thing would go into oscillation."

"You're absolutely right, Kid. If the amplifier has enough amplification and there is enough power input to sustain oscillation, that is exactly what would happen. Now, what would happen if I would put it in at point B?"

"Well, I suppose — golly, I don't know, Chuck — wouldn't it be in phase with the voltage across the cathode resistor R_1?"

"Yes, Kid — but here is the difference: as we try to drive the cathode more positive in respect to the grid, aren't we actually cutting down plate current which means that the stage isn't amplifying as much?"

"I guess you're right, Chuck. I hadn't thought of it that way."

"Well, Kid, there is your difference between positive and negative feed-back. In the first case, feeding the output voltage into point A would be positive feed-back since we're tending to aid the input signal. The second case, feeding the output voltage into point B, would be negative feed-back as we are tending to buck the input signal. Incidentally, calculating the amount of voltage fed back is an easy matter since it is simply a voltage divider action. For example, if we feed-back to point B, the amount of voltage can be figured from $\frac{R_1}{R_1 + R_3} \times e_0$. Do you see any particular advantages to negative feed-back, Kid?"

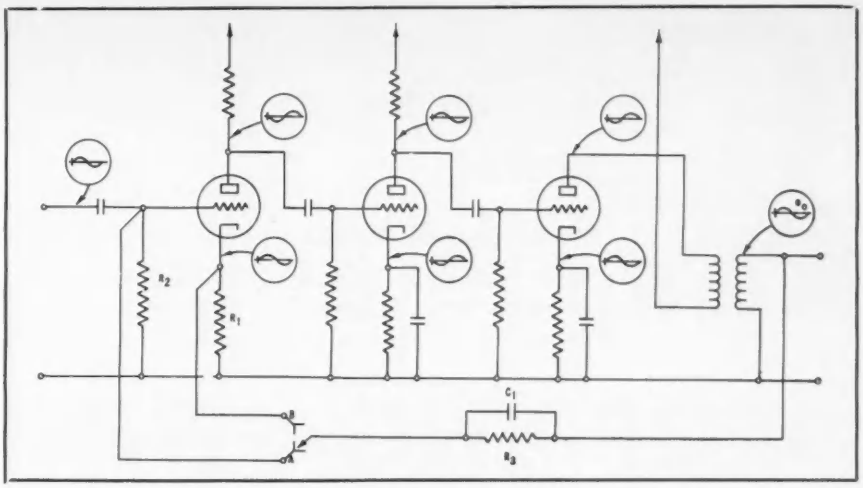


FIG ONE: — Chuck quickly sketched a simple three-stage amplifier and indicated the phase relationship of voltages at various points on the circuit.

"Frankly, Chuck, I don't — what the heck good is negative feed-back?"

"Advantages To Negative Feed-back"

"WELL, Kid, say that you had an amplifier whose frequency response isn't very good — let's say it tends to peak, or hump, over a rather narrow band of frequencies and then drops off on both sides. If I use negative feed-back, the maximum amount of feed-back would then be in the humped portion of the frequency response curve, and the minimum amount of feed-back would be on the sides. I may not be explaining this too well, but actually what it does is to act as an automatic compensator and flatten out the frequency response curve. In fact, by such means you can broaden out an amplifier to where it will have a very flat response curve. This principle is used in almost everything nowadays where good response is required."

The Kid scratched some more. "By golly, Chuck, I think I see what you mean by positive and negative feed-back, and some of that other stuff, but I'm still mighty hazy on it."

"Don't worry about it, Kid, we'll get into it a lot more deeply in the future and you just try to absorb what we went into today — Come on, it's time that we got back to the salt mines."

Chuck and the Kid took their coffee cups back to the counter and beat a hasty retreat toward the equipment room. — *C. D. Ehinger.*

"TOUCH-TONE" CALLING

THE Bell System has adopted "Touch-Tone Calling" as the name for pushbutton telephone service. The new name will be used in a market test of the service scheduled to start later this year in Findlay, Ohio, and Greensburg, Pa.

A product trial of the phone with push-buttons instead of a dial was conducted in Elgin, Ill., and in Hamden, Conn., last year. During that trial, some 200 of the phones were used in about 150 Elgin homes and businesses.

To place a call on the touch-tone phone, the user presses buttons instead of turning a dial. Pressing the buttons transmits multifrequency tones to the central office. The user hears the tones in the receiver. The new name for the service reflects the high customer appeal of the tones, as revealed by last year's tests.

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Any comments, criticisms, or suggestions for future topics? Address all correspondence to "Sub-Harmonics and Overtones," Telephone Engineer and Management, 7720 Sheridan Road, Chicago 26, Illinois.

ACCOUNTING NOTES

By Dr. G. M. JONES

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DROPPING PENNIES TO SAVE DOLLARS (Part II)

The elimination of pennies on report forms leaves room for more significant columns of information.

What's Wrong With It?

DURING the years when these companies gradually were adopting whole-dollar accounting, various objections were raised. The supposed disadvantages or objections fell into the following groupings:

(1) The practice of rounding will encourage looseness and "plugging" by careless, lazy, or corrupt employes.

(2) The practice of rounding here and there will add up to large cumulative variances.

(3) Some regulatory commissions and taxing bodies may not approve of the method.

(4) Rounded unit costs or rates, when multiplied by large quantities, will result in serious distortion in accounting figures.

(5) Sometimes a rounding of each of two figures may not be significant in itself, but the difference between two such rounded figures may be significantly distorted percentage wise.

(6) Sometimes rounding off will cause more work than it will save.

(7) Rounding of parts of transactions means giving up the double-entry, self-balancing feature of the accounts.

There is an answer to each one of the objections. May and Klingman found that most of these objections failed to turn into actual disadvantages, but that in some cases one or more of these difficulties did exist. Usually the trouble arose with only one or two categories of accounts which were inherently not suited to rounding-off treatment. Likewise, they found that there were mathematical biases in a few cases where entries of a certain size occurred in unusual frequency so that the washing-out effect of roundoff did not prevail.

In answer to the charge of encouraging looseness, it appears that where employes are adequately educated in the new method, where good supervision of quality of work is maintained, and normal auditing procedures followed, there is no more a problem of carelessness or "plugging" than there is in last-penny accounting.

Whether rounding will introduce large cumulative variances can be determined in advance, for any of your own volume operations, by taking large samples of your own transactions just as they come, and rounding these off experimentally, for comparison with known totals derived in the regular handling of the same items.

Where typical transactions involve amounts under $10. and especially under two or three dollars, it is possible to generate relatively large net variances if each entry is rounded. This would then be an unsuitable application of rounding.

In this case, individual line items would not be rounded, but summary amounts (column, tape, or tabulator totals) would be posted without the pennies. This sort of problem arises frequently in pricing out stores requisitions, where many individual charges are for small amounts. On the other hand, since many telephone stores items are handled, accounting-wise, on an "exempt supplies" basis, avoiding the posting of account charges for picayunish requisitions, the rounding error may be no problem for this area of telephone accounts.

There seems to be no good reason why governmental agencies should object to whole-dollar accounting, as long as the accounts conform to the content and procedures spelled out in regulations, i.e., the prescribed

classification and disposition of expenditures, adherence to the cost principle, etc. The Treasury spelled out its specific permission to report on a whole-dollar basis, in the 1954 Internal Revenue Code changes. Telephone company accountants or controllers looking into the possibility of adopting whole-dollar accounting should make sure of the position of their state commission.

According to May and Klingman, accounting personnel sometimes felt initially that it was too troublesome to round off entries, but as soon as they understood thoroughly what they were doing and had a little experience with it, they quickly found it less work. In some specific kinds of transactions which would subsequently require detailed reconciliations if entries were rounded off (i.e., withholding taxes and FICA deductions), it was best to retain all cents throughout the accounting. As indicated earlier, it was necessary to retain pennies in detail accounts-receivable keeping, and in the control account to which customers' accounts are reconciled, but the corresponding credits (to revenue) could be rounded, since revenue figures are for internal use.

Actually, it was found that omission of the two penny digits reduced the number of digits to be handled by 40 to 50%, on the average (since entries average five digits plus decimal point in length), and saved keystrokes in mechanical posting and checking. On the other hand, the rounding, batch control and penny-elimination procedures added enough handling to offset part of the direct saving of time and effort; the net saving where the rounding technique is applicable was estimated to amount to from 10 to 30% over last-penny accounting.

One of the above mentioned advantages of whole-dollar accounting is the simplification of recording forms and report forms. For instance, in punched cards being used for recording expense transactions, the elimination of pennies leaves more columns available for analytical and statistical data, such as a finer code breakdown for reporting by ex-

1960		REPAIRS TO BLDG. & GROUNDS			606-02	
DATE		REF.	ITEM	CHARGES	CREDITS	BALANCE
01 03	0	747	WO Repair Step	78		78
01 03	0	34742	VP Rep. Heating	112		190
01 03	0	753	Req. Suppl.	8		198
01 20	0	29	Store Return Suppl.		4	194

EXHIBIT FOUR: — Whole-dollar accounting in expense ledgers.

changes, areas, or functional responsibility.

Likewise, the elimination of pennies on report forms leaves room for more significant columns of information on any given report form, or for a compressing of information in order to make use of smaller forms. (*See Exhibit* 3.) This economy reduced paper and printing costs for some of the companies, and reduced typing costs in preparing reports. For performance reports, budget and operating figures freed of needless pennies take less paper, are ready sooner, and are easier to read.

Dollar rounding fits in very nicely in labor accounting with group rates for charges to jobs. Rather than charge a specific job with the precise wage rates earned by the particular individuals on the job, it is much simpler to charge the job with total hours at a group rate for that particular class of labor. Since the amount charged is therefore an approximation, no further distortion from "actual" (i.e., precisely measured) cost is involved in dropping the pennies from the charge to the job.

You are invited . . . to tell TE&M authors your problems of department policy or procedure on which you'd like to have an opinion.

While we don't claim to have all the answers, we'll welcome the opportunity to discuss as many as possible in our columns.

The same thing applies in charging materials to the job. We seldom charge the exact cost of the exact piece of material being used, because our materials are carried at some average, Fifo, Lifo, normal, base, or standard unit price, and we seldom know the real price of the unit being used on a job. Again, no further distortion from "actual" cost is involved in rounding the charge to the job.

Exhibits One through *Four* have shown various uses of penny elimination. In Exhibit 1, the offsetting effect of rounding was shown; on a total of $19.26 on ten individual items, the error through round is $.26, or about 1.3%. This illustrates the probable extreme degree of distortion, because all the items in the list are small; therefore the degree of distortion in individual items may be quite large when the item is rounded to the dollar. If this were a list of items all chargeable to one expense account, the rounded total would be posted to the account, with the odd cents carried to the penny elimination account. Exhibit 2 showed a voucher wherein the rounding procedure was applied to the expense. debit, without disturbing the amount due to the vendor. Exhibit 4 shows an expense account to which postings are made of rounded amounts. In Exhibit 3, a multi-column working paper, 16 columns of type are saved across the page by omitting pennies — enough to reduce the form by 1½ inches in width.

— *Dr. Gardner M. Jones.*

TRAFFIC LIGHTS

By D. A. PERIGO

General Traffic Mgr., West Coast Tel. Co., Everett, Wash.

FIRST ANNIVERSARY FOR "TRAFFIC LIGHTS" . . .

It has been a busy year for the editor of "Traffic Lights" and reader mail proves his department has "stimulated thinking."

EXCEPT for the calendar, it is difficult to believe that with this issue of *Telephone Engineer & Management* "Traffic Lights" begins its second year. It makes a good time to reminisce a little bit.

Our first article was "Traffic Information Service." We outlined a plan for centralized information service by code areas. Obviously some others were thinking along the same line because progress is being made in that direction — and we know we did not start it. We still think the solution we suggested has merit and that we will eventually wind up with something quite similar. (See T. E. & M. 8/15/59 for details.)

We wrote about Statistics and Controls. We hope you have tossed out the statistics that were "nice to have" in favor of those which have practical use. We said "Whenever the cost of control is greater than the amount controllable the result is a loss." We raised some questions about the 10-day Toll Distribution Study and its present-day uses. (See T. E. & M. 9/15/59.)

Then came "Proof of Value Month" and we found that people outside the telephone business were prodded a little into some housecleaning. We heard about it from a consulting engineer and also from a City Department (which probably surprises you.) This is one which we review ourselves each year and it will never do any harm. Read it again. (See T. E. & M. 10/15/59.)

We discussed some of the problems of Christmas traffic and wondered if premium rates instead of reduced rates might be an answer.

Among others we have discussed the "Economic Aspects of Traffic Department Vacations," "Traffic Expense and Automatic Ticketing," "Selection and Training of Chief Operators," "All Numeral Calling vs. Other Numbering Plans," "Who Can Afford a PBX Service Advisor," "Employe Development Records," "Economic Aspects of Absence Control," "Mark Sensing of Toll Tickets," "The Service Index," "Automation and Full Employment," "Be Prepared," and then three articles about Traffic Engineers.

"To Stimulate Thinking"

WELL, in our initial column we said that our primary objective was to "stimulate thinking" — so we wonder how we have measured up to this objective. Over the past year we have encountered a lot of telephone people at conventions, committee meetings, and other gatherings as well as in our regular contacts. It has surprised and delighted us when the conversation starts by saying, "*You know your article about . . . . . started me to thinking!*"

An author likes to think that people are reading what he writes — and it sure feeds his ego when he discovers he is meeting the objective of stimulating thought.

We gather from some communications that some of our readers expect us to solve their problems. It is not our intention to solve problems because they are best solved by yourself. In the first place we don't know *everything*. Indeed there are times when we wonder if we know as much as we should — but time and time again we point out that what is good for one company may be bad for another. You must judge for yourself. Sometimes we can be helpful — but always remember that our suggestions must be adapted to your particular situation.

As a matter of fact, a review of

Traffic Lights for the past year indicates we have probably stirred up more problems than we have solved. This is what we call stimulating thought.

Sometimes we are critical — but we hope our criticism is accepted in the spirit in which it is given.

We are not going to try to list all of those who have commented about our efforts during the past year. You know who you are — and we want you to accept our thanks. We do want to relate a couple of comments that have amused us without mentioning any names.

One of these came from a man in the Accounting Department of another company who commented on Employe Development Records. He said, "*I was thoroughly intrigued with the story of Ruth. Had me worried for awhile so I could hardly wait to find out what finally happened.*"

On another occasion we were sitting between a Chief Operator of another company and one of our own District Traffic Superintendents. In commenting on Traffic Lights the Chief Operator said, "*Working for you must be quite an experience*" to which our District Traffic Superintendent replied, "*It sure is. He stirs up more things than* 10 *people should!*" — after which we accepted the apology.

Well, we work on the basis that the more things get "stirred up" the more will be accomplished.

So much for the reminiscing — now for the future.

Last year when we agreed to give this writing a try we had visions of running out of things to write about. We find there was no foundation for such fears. As of now we have accumulated all kinds of material. We have a few suggested subjects. But we are definitely interested in the subjects you want to read about — so why not send us a list of the items that are bothering you? — *D. A. Perigo.*

You are invited . . . to tell TE&M authors your problems of department policy or procedure on which you'd like to have an opinion.

CONVENTION QUOTES

THE ROAD AHEAD

AS WE reflect on the road ahead we are confronted with more than just a need to meet competition in the narrow sense. If we are to do our job as it should be done, we must orient our thinking towards the broader goals we have set. In this we should be together as an industry.

We must adopt a concept of service which will never permit us to be satisfied we have done good enough.

We must strive for good profits by developing jointly and efficiently the full market potential in the communications field. We must continue industry-wide solidarity in shaping favorable public opinion.

Finally, if there is one conclusion to be drawn from the look ahead it should be this — that in serving the public we must be more effective in the future than we have been in the past in all of our activities. By so doing we will not only be discharging our duties as managers of an important industry, but we will contribute much to preserve our way of life. — *Adapted from address of Carl T. Dutschmann, vice president, New York Telephone Co., at* 1960 *convention of the New York State Telephone Association.*

"IT'S YOUR MOVE"

WE AMERICANS fall victim to many fallacies in our thinking, but there is one which is more widespread and less noticed, I think, than any other: the belief that life can be compartmentalized. Many of us appear to think that religion, for instance, can be kept separate from daily conduct, and be made a one-day-in-seven activity. If we are to judge by the movies of recent years, many gangsters believed they could keep their homes and social status completely separated from their "business" activities. For many years we believed that as a nation we could isolate ourselves from the rest of the world and that it was no concern of ours what occurred in the rest of the world.

Some of these compartmental concepts still prevail and the most vicious and destructive of them is the belief that economics and politics can be kept separate from each other and that the business man must not "get into politics." The business community never made a bigger mistake than to accept the idea that the successful business unit must ignore political convictions and remain aloof from political action. For you are in politics whether you like it or not, and while Bob LaFollette may have been wrong about many things he was absolutely right when he declared that "politics is economics in action!" — *Adapted from address presented by Dr. Orlo M. Brees at the* 1960 *convention of the Washington and Oregon Independent Telephone Association.*

COMMERCIAL DEPARTMENT NOTES

By ALLAN R. STACEY
Vice Pres., Sunland-Tujunga Tel. Co., Sunland, Calif.

HOME INTERPHONE SYSTEMS PLEASE ILLINOIS SUBSCRIBERS

Visit to Evanston, Ill., installations of Home Interphone Units proves subscribers like and use new intercommunication systems.

FOR SOME time I had been wanting to make a personal visit to a telephone exchange installing the new Home Interphone units to see for myself how they worked, what they looked like and how the customer accepted them.

Early in July my travels took me through the state of Illinois and while there, Frank P. Knoll, director, market research, Illinois Bell Telephone Co., arranged for me to visit the Evanston exchange, part of the market trial area where Home Interphone units were introduced on a regular basis to the public early in the month of June. Frank arranged for the Evanston District Commercial Manager, "Doc" Gates, to show me around and together we visited the homes of two customers who had recently installed Home Interphone units.

What Is Home Interphone?

HOME Interphone is a new home communications system which provides communication between rooms of the house, between those rooms and the front door or the back door and between those rooms and any part of the world available by telephone today. Let's see how it works.

Mother answers an incoming call in the kitchen. It's for sister. Wherever she is in the house, sister hears mother's voice calling her through the speaker beside each telephone in the house. Sister takes her call on the phone that is nearest.

Mother is getting dressed when the doorbell rings. But, she doesn't have to put on a robe and go answer it in person. Instead she simply picks up the bedroom phone and asks the visitor what he wants.

Here's an example that fits me perfectly in my home life. Dad can't find a sport shirt, and mother, who knows where to find everything, is in the kitchen. But dad just asks her on Home Interphone and learns his shirt is already in the laundry room.

There is a party downstairs, and the baby is asleep upstairs. But, because the crib has been moved near a telephone, mother can check on the child's sleeping by picking up the nearest phone and listening.

How Does It Work?

A STANDARD 500 type series telephone in either wall or handset model has been appropriately adapted for Home Interphone service. A small speaker is placed near each telephone to provide the listening or broadcasting side of the service. The "speak to" side is through a small microphone contained inside the telephone instrument. The control equipment is mounted in the basement or some other suitable place.

The telephone instrument has two additional buttons for the customer to use in conducting his Home Interphone business. A hold button is in conjunction with one of the buttons on the switch-hook and a line button is located in the left front corner of the base housing. (Incidentally, with slight variation of location and type these same features are available with the new lightweight telephone — the "Princess.")

To page within the house on the Home Interphone line, you just turn the line button to its horizontal position, pick up the receiver and simply say the name of the person that you want to reach. Your voice is heard from a small speaker mounted near each phone in the home.

To answer on the Home Interphone line you either pick up the handpiece or respond "handsfree" by just talking in the vicinity of the telephone

instrument. The small, sensitive microphone in the phone's base picks up your voice.

To answer the front door, you pick up the nearest phone, turn the line button to its horizontal position, depress and release it. A small unit mounted near the door, on the outside, contains a speaker for your voice and a microphone to pick up your visitor's voice, which you hear on the telephone. However, calls within the house do not go over the outdoor speaker: thus internal privacy is assured.

To make calls outside of the home, you turn the line button to its vertical position, which connects you with the outside line. Your telephone will ring when there is an incoming call even though the line button is turned to a horizontal position.

To transfer a call to another phone in the home, after you have answered the incoming call, raise the hold button. Then turn the line button to horizontal and page the person you want.

Home Premises Of Two Customers

THE HOME of the first customer we visited was a one level brick facade dwelling with a basement containing a playroom and the workshop. This customer had a front door answering speaker-microphone plus a Home Interphone telephone in the baby's nursery, the basement playroom, the kitchen and the family room. The control equipment for the Home Interphone had been located near the electrical fuse box in the workshop area.

I asked the lady of the house what she liked best about the Home Interphone and she told me it was the fact that anywhere in the house she could pick up the telephone instrument and check on whether the baby was still sleeping soundly or was crying for her. Since the baby's nursery room was located towards the back of the house there had been times in the past when the baby was crying and no one was aware of it. Now, with her Home Interphone, the mother was able to easily listen to the baby from a distance.

"Must be a good size job!"

I noticed with interest that this customer had several colors of telephones throughout the house and that the Interphone speakers matched the instruments in color.

The home of the second customer we visited was a two-story Georgian type structure where it was immediately obvious to me that Interphone would be an advantage in being able to communicate between the rooms of the home. Since I personally live in a two-story house, I have often "enjoyed" the experience of trying to find one of my daughters, whose presence was being requested upon the telephone, by shouting at the top of my voice to make her hear me in some other part of the house.

In this second house, the front door speaker was located on the outside wall close to the front door button. In the previous house, it had been located overhead just under the eaves, apparently because of easier access in the cable run terminating overhead because of the brick facade type of construction.

In the house of the second customer, there was one kitchen Home Interphone, one in the living room and one in the upstairs and one in the basement.

Improvements To Be Made

IT APPEARS to me that a fine job of basic engineering has been done on this system and that it certainly fills a genuine need of a certain class of our telephone customers.

It may be possible at some time in the future to have the telephone company install voice communication without having to pick up the handpiece of the telephone instrument itself on one of the two ends of the conversation. The present system requires that when two persons are speaking within the house, one or the other of them must be holding the handpiece, while the second may be talking "handsfree."

What About Tariff Structure?

THE HOME Interphone unit costs $25. basic installation charge plus any installation charge that might be related to installing telephone instruments without Home Interphone. The minimum package contemplates three telephone instruments plus three speakers plus one door answering unit. A second door answering unit will be installed for a nominal charge.

The monthly rental on such a system is $6. per month including one door answering unit and an additional $1.25 per month if a second door answering unit is desired. In addition, monthly rental charges apply for all telephone instruments used in the service. For example, if a system had one primary station and three extension telephones, the tariff rental would be $6. for Home Interphone per month plus a residence primary rate and three residence extension rates.

From these rates it appears to me that the Home Interphone will go initially into upper income areas but the market trials should give a good indication. Therefore, I can envision that it will ultimately become popular with all of the middle income families as well.

Incidentally, on the literature being distributed by the Bell System, stands the phrase, "Like all Bell System services, Home Interphone is guaranteed for life. It is maintained and serviced without charge by Bell System technicians."

Did you ever stop to think that our services are literally "guaranteed for life?" We should certainly be mentioning this more often to our customers.

This was certainly a most interesting visit to see the Home Interphone going in on a regular installation basis and I'd like to take this method of thanking my hosts Frank Knoll and "Doc" Gates. — *Allan R. Stacey.*

PLANT ENGINEERING NOTES

By JOHN S. REED
Technical Editor, TELEPHONE ENGINEER & MANAGEMENT

VOLTAGE TESTER DETECTS HAZARDOUS PLANT CONDITIONS

Canadian Bell's plant men use single voltage tester to detect dangerous potential on power grounding conductors.

FIGURE ONE: — Jules Gravel, station installer, makes use of a voltage tester to check a broken ground wire before climbing a pole in Bagotville, Que. (The Blue Bell.)

RECENT article in the *Blue Bell*, publication of the Bell Telephone Co. of Canada, describes the use of a single voltage tester to detect dangerous potentials on power grounding conductors. Many people, even telephone plant men, are not aware of the danger of a high voltage present on a ground wire run down a pole from power conductors above the telephone facility. Street light brackets can be dangerous, too. Plant men have been killed by coming in contact with an energized light bracket and a cable suspension strand at the same time.

The tool as used in the Bell System, and shown in *Figure One*, is designated Z voltage tester and consists of a probe, a neon light and reflector assembly, two feet of cord connecting the probe and light and fourteen feet of cord from light to insulating clip. A metallic disc and needle prongs are provided at the end of the probe to make electrical contact with the ground wire or street light fixture being tested. The whole tool weighs a total of eight ounces.

This tool is designed to detect the presence of potentials ranging from 60 to 7,200 volts. As well as uncover-

ing wiring hazards, the voltage tester permits the telephone man to identify the electrical condition of a power grounding conductor prior to making a cable bond or protector ground connection.

Street lighting fixtures in the communications space can be checked by the voltage tester. Although the trend in modern street lighting seems largely to be going to higher levels, many low level street light fixtures are located only a short distance from the telephone facilities. A temporary bond is placed between the light fixture and the cable suspension strand to ensure that the fixture and strand remain at the same potential throughout the entire working period.

When an energized broken ground wire or street light bracket is detected, the power company is notified to correct the hazardous condition. Meanwhile, the pole on which the hazard is present is marked as a warning to other employes who may have occasion to climb the pole.

Test Set For Loaded Cable Pairs

TO MAKE SURE that cable pairs are properly loaded, acceptance test methods have been devised to check the pairs being loaded. Such methods usually require considerable time and the use of expensive test equipment.

Communication Equipment and Engineering Co., Chicago, has developed a type of test set, the C100 set, which is said not only to make loaded cable acceptance checks practical, but to aid in locating irregularities when they are determined to exist. Included with the set are simple step-by-step instructions for performing the tests and interpreting the results. The set is illustrated in *Figure Two.*

For making H88 loaded cable acceptance tests, the test set is connected as shown in *Figure* 3. Two C100 test sets are required. A 600-ohm variable oscillator is connected at the "A" end, and a 600-ohm vacuum tube or transistor type volt-

Please turn to page 54

QUESTIONS and ANSWERS

QUESTION: — *How would it be possible to provide verification of a busy line by operators in a customer dialing setup while at the same time preventing access to the verifying equipment by subscribers?*

ANSWER: — The usual method of preventing access to verifying equipment by telephone subscribers is to provide a separate trunk group from the dial "A" board to the local dial office. However, when a distant tributary is involved, the separate trunk or group of trunks which must be run to the tributary for operator use may be quite expensive. If there are a number of tributary trunks, one trunk may be left out from the trunk selector banks at the toll office for use by operators exclusively to the tributary. At the tributary, the incoming selector on which this trunk terminates would be the only one with access to the verifying equipment. This would reduce the number of chances for subscribers to obtain unauthorized access to the equipment. However, the operators might have some trouble in obtaining this special trunk for verifying a busy line condition. When such an arrangement can be provided by the dial equipment manufacturer, a "mark" (a special electrical connection) is placed on one of the trunks when it is used by an operator. This mark will automatically connect a special selector with access to the test connector. If a customer uses the trunk, the mark will not be present and a regular selector will be connected which has no access to the test connectors.

QUESTION: — *We are planning a program to pressurize our cable. We have some cable repairs to be made and some cable is to be added to the present plant. What procedure should be followed to assure that we have tight joints in the cable on completion of the construction and repair work?*

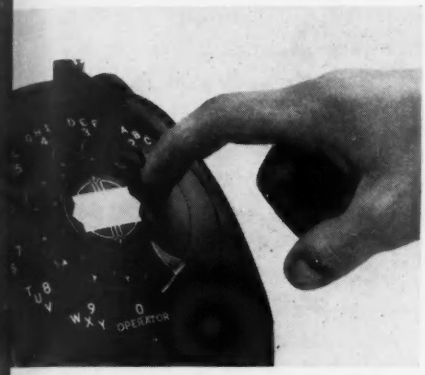
ANSWER: — Localized pressure tests should be made as the construction and repair work proceeds, since it is easier to detect small leaks in isolated cable sections than when the entire plant is pressurized. To illustrate this point, suppose you have two containers of different sizes having air under the same pressure in each. If you punch a tiny hole in each container, you will note that the pressure inside the small container will drop much faster than that in the large container. As each cable section is placed, the section should be pressure tested before and after the placing operation. Also after the splice is made, each splice should be flash tested. This procedure saves much time since it is not necessary to go over the complete plant afterwards to locate the small leaks.

QUESTION: — *Why is it necessary to ground a metal type telephone booth?*

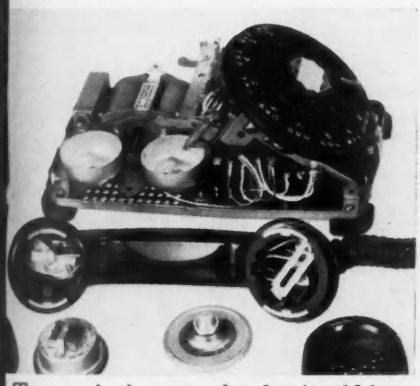
ANSWER: — The grounding of metal type booths is based on the requirement of the National Electrical Code for grounding of a metallic structure into which electric current is brought for lighting or power purposes. Grounding may be accomplished through connection of the metal conduit to the structure or a grounding conductor run separate from or with the service conductors. The telephone and power service conduits should be bonded together through the booth structure or by means of No. 6 insulated bond wire, using station ground clamps for the connections. If the conduits are placed underground with less than 10 feet length in the earth, or an overhead service is placed, a ground rod should be installed and the bond wire connected to it.

Type 80 is shaped so that the handset almost automatically "walks" into the cradle—cuts down off-hook trouble. Handset is slim and light.

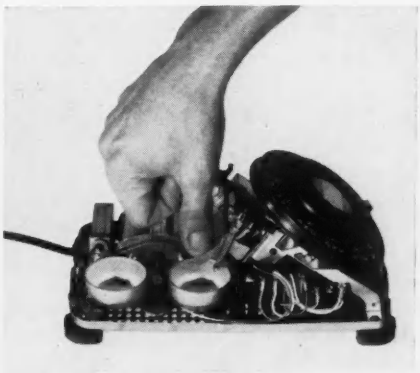
only Type 80 offers you all these features!



Dialing is dependable, always easy, unusually silent. A new dial mounting slides on and off in a jiffy—there are no screws to loosen.

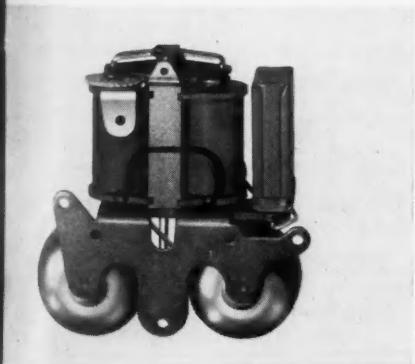


Transmission speaks for itself in a loud, clear, lifelike way. Sidetone and nearby noises are minimized—line loss is largely overcome.



Installer's hooklock keeps hook down during installation—service man has both hands free. No calls are lost, no switches tied up.

Installation requires *only* a screw driver—you save on man-hours. Maintenance is rare. Components are screw-mounted and interchangeable.



Ringing is of ample volume at all frequencies. Ringer and ringing condenser are mounted as a unit—saves time and prevents mismatching.

Every telephone you buy is an investment. Naturally you want the best quality...the best value. Remember these features about the Type 80. Remember, too, that Type 80 is available in 10 decorator colors. To order, contact your AE salesman or write: Automatic Electric Sales Corporation, Northlake, Illinois. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16.

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GENERAL SYSTEM

meter is connected at the "B" end.

The method is as follows:

Step 1: — Compute 1000 cps and 3000 cps transmission loss of loaded cable using the simple form included with test instructions. Subtract 1000 cps loss from 3000 cps loss. This gives the *computed deviation.*

Step 2: — Measure 1000 cps and 3000 cps loss using the arrangement shown in *Figure* 3. Subtract 1000 cps loss from 3000 cps loss. This gives measured deviation. If the Impedance Compensator in the C100 test set is not used, reflection loss between the test equipment and the line will make the measurements uninterpretable.

If the *measured* deviation and *computed* deviation are within (a) One db, cable loading is nearly perfect; (b) About two db, there are slight load coil spacing irregularities but loading is acceptable for most applications; (c) Three db or more, there is a major irregularity such as a missing coil, incorrectly installed coil or two coils where there should only be one.

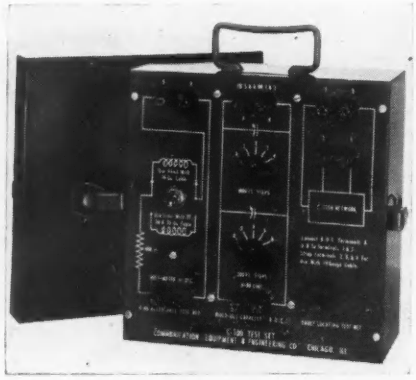

FIG. TWO: — Showing the newly developed C-100 Test Set for checking loaded cable.

This acceptance test can be made on a loaded cable count in a short time by measuring the 1000 cps loss of one pair and then measuring the 3000 cps loss of all pairs. If the 3000 cps measurement gets out of line, there is reason to stop and investigate.

To determine the cause of the variation, the C100 test set is connected as shown in *Figure* 4, using a 600 ohm variable oscillator and 600 ohm vacuum tube or transistor voltmeter connected in the indicated locations (600-ohm osc. and VTVM).

This method relies on measuring "reflections" from the load coils in the cable. (If the loaded cable pair is terminated in something other than a C115H balancing network, the termination itself will cause "reflections" and the results will be difficult, if not impossible, to interpret.) With the test arrangement shown in *Figure* 4, the oscillator is varied from 150 to 3500 cps. Peak and valley readings from the meter are recorded on forms supplied with the C100 test set instructions for this purpose.

The number of peaks or valleys obtained in the recorded measurements are counted. The "bad" or irregular load section is located by adding *one* to the number of peaks or valleys. Thus one peak would indicate irregularity at second loading point, two peaks, an irregularity at the third loading point, and so on. The test set instructions include tables and plots of circuits with missing load coils to assist in interpreting test results.

The method of making loaded cable acceptance tests and locating irregularities is claimed to give positive results in a much easier way than by making impedance or return loss measurements.

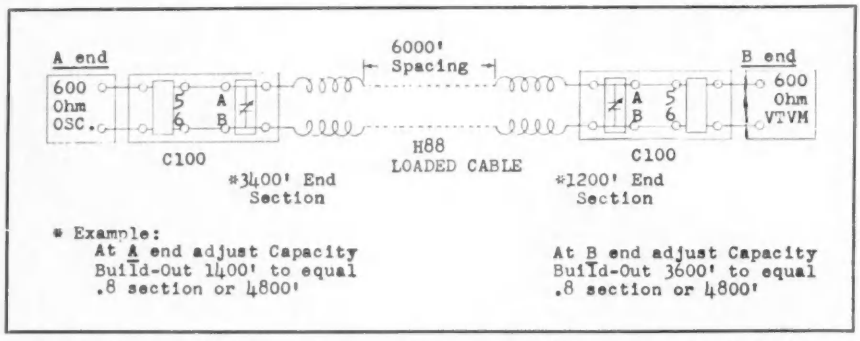

FIG. THREE: — Method of testing H-88 loaded cable pair, using two C-100 test sets, variable oscillator and vacuum tube voltmeter.

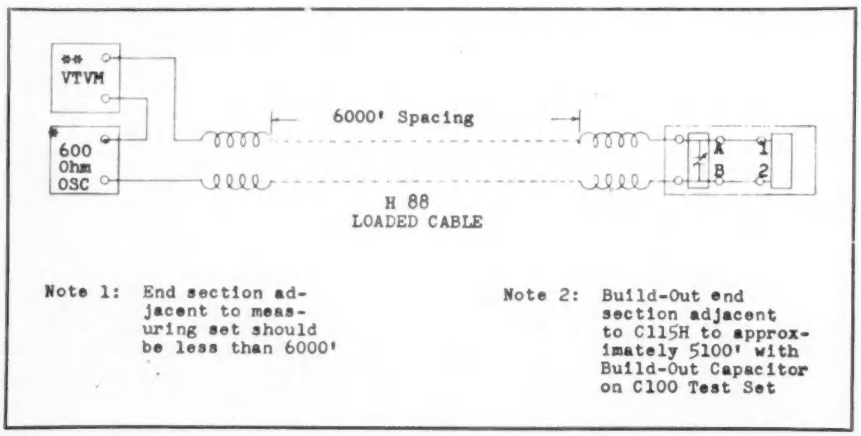

FIG. FOUR: — Arrangement for determining location of an irregularity in H-88 loaded cable pair.

You are invited . . . to tell TE&M authors your problems of department policy or procedure on which you'd like to have an opinion.

TELEPHONE ENGINEER & MANAGEMENT's

PLANT MAN'S 'SPEC' BOOK

(13) Cable Pressurization Procedures — Installing Pressure Plugs, Contactors, and Valves

Should a block have to be by-passed using this system, a pair of truck tire valves can be taped to the cable sheath over a small hole and connected with lead tubing, allowing the gas to by-pass the block. Valve cores should be removed for this procedure. The procedure is illustrated in *Figure* 14.

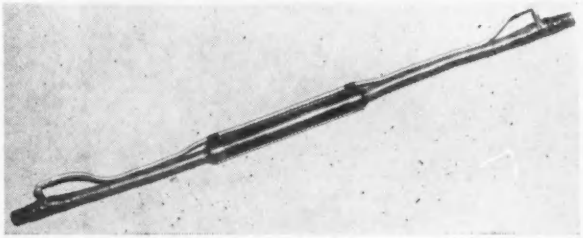

FIGURE 14.

Installing Dams in Small Cables Using the Resin Pressure System

Quick simple dams can be made in small cable (under one inch) employing the resin pressure system. This method is particularly adaptable to small paper insulated cables where complete wetting of the insulation may be difficult without pressure. It is useful for damming stubs of terminals that are not gas tight.

1. A hole about ¼ inch square is cut in the sheath after it has been cleaned with a file card or steel brush as indicated in *Figure* 15.

2. An injection fitting is taped over the opening with plastic tape and restrictor tape applied. See *Figure* 16.

3. A small size container of resin is pumped into

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(14) Cable Pressurization Procedures — Installing Pressure Plugs, Contactors, and Valves

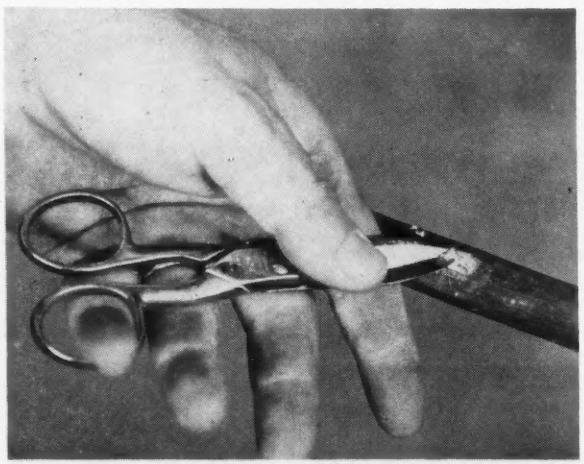

FIGURE 15.

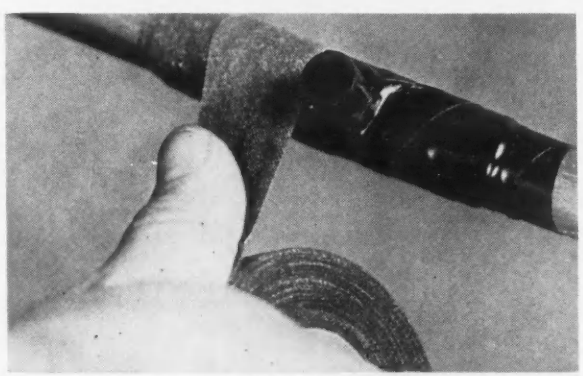

FIGURE 16.

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(15) Cable Pressurization Procedures — Installing Pressure Plugs, Contactors, and Valves

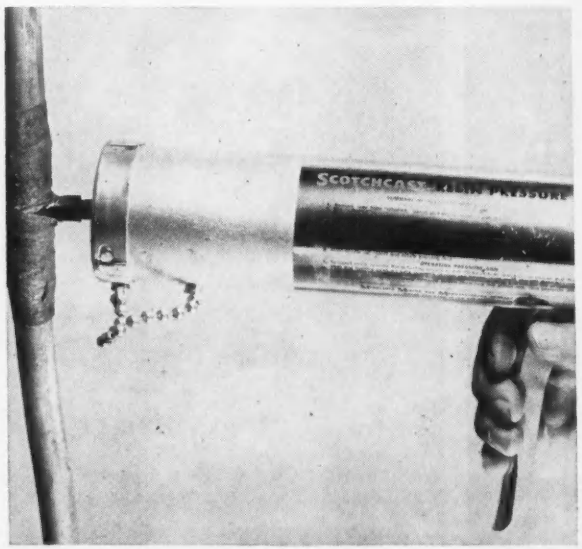
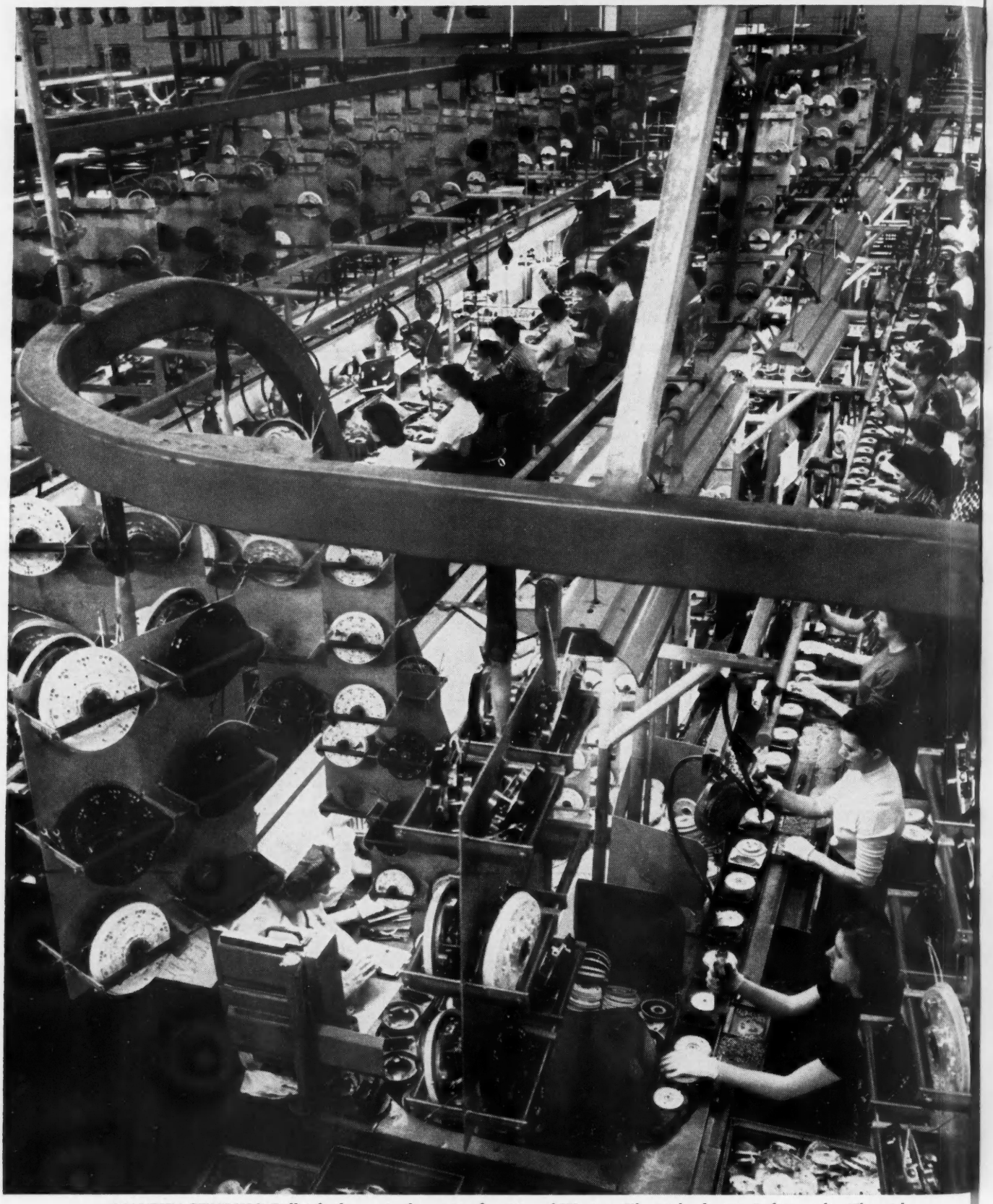


FIGURE 17.

the cable to form the dam as illustrated in *Figure* 17. The small size of the cable allows the resin to form a complete block.

The new "Plant Man's 'Spec' Book" is a regular feature of "Telephone Engineer & Management." We urge all readers to read and file these informative 'Spec' book sheets for future reference.

WESTERN ELECTRIC AND



MANUFACTURING Bell telephones is the major function of Western Electric's plant in Indianapolis. The girls above are working on the final assembly of telephone dials. Western Electric also has major manufacturing locations in 12 other cities where we make cable, wire, switchboards, relays, and many other different kinds of telephone equipment and apparatus for the Bell Telephone System, as well as defense products for the Government.

THE BELL SYSTEM

For 78 years Western Electric has been the manufacturing and supply member of the Bell System. Working with Bell Laboratories and the Bell telephone companies, Western is an integral part of the team which provides this nation with the world's finest telephone service.

The Bell Telephone System operates nearly 58 million telephones in the United States. Western Electric's job is to back them up with the many kinds of materials and equipment needed to make them work well.

Telephone instruments—over 8 million new ones this year—are just part of the story. Behind them are complex switching systems, radio relay and carrier equipment, millions of miles of wire, cable and all the other apparatus necessary to link these phones into an efficient, dependable unit. This monumental job is possible only because of the close teamwork in the Bell System among Western Electric, Bell Laboratories, and the Bell telephone companies.

Besides manufacturing, Western Electric performs three other important jobs in helping provide good telephone service. Western *purchases* many supplies and equipment in addition to what it makes... *distributes* both purchased and manufactured items to the Bell companies... and *installs* switching equipment in telephone central offices.

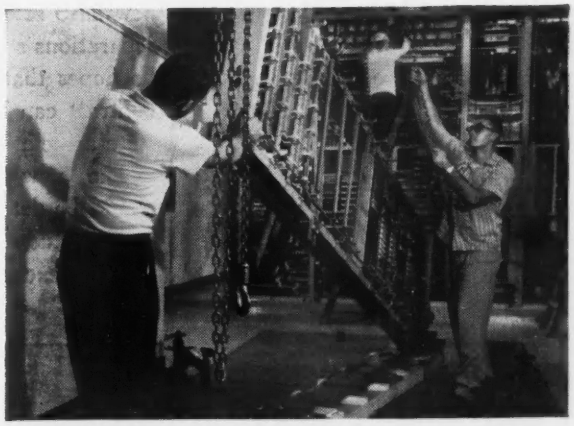
A perfect example of Bell System cooperation is the way Western Electric works with Bell Laboratories. The research achievements by the Laboratories—the transistor, coaxial cable, radio relay, Direct Distance Dialing, etc.—provide us with the basic means for keeping the Bell System in the forefront of communications technology.

Western Electric will continue to depend upon close teamwork with the other members of the Bell System to assure the dependable, reasonably-priced, ever-improving telephone service America has come to expect.

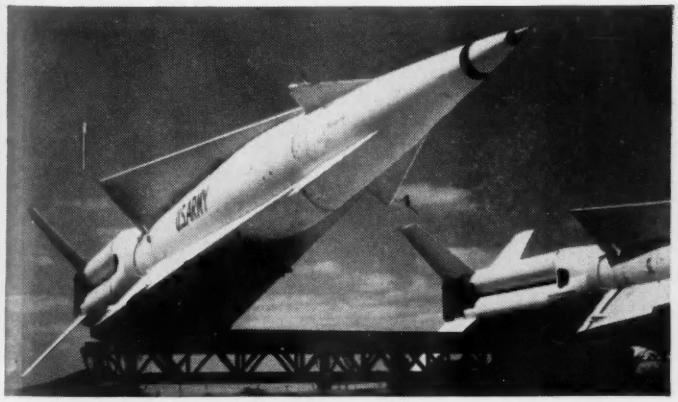
Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

PURCHASING for the Bell System by Western Electric provides the telephone companies with a wide variety of high quality products at low cost. W.E. buyer (left) discusses telephone set cartons with a representative from Inland Container Corp.



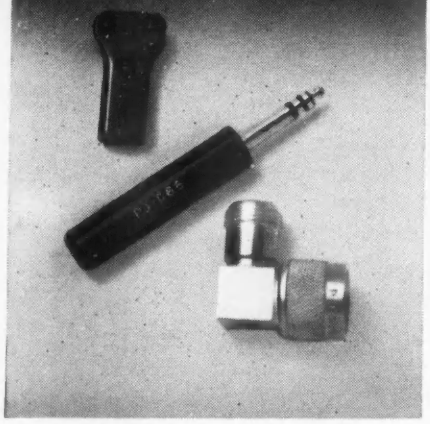
INSTALLATION of Bell telephone central office switching equipment is performed by Western Electric's flexible force of skilled installers. Above, an intricate frame of switching equipment is hoisted into position by W.E. installers in a central office.



NATIONAL DEFENSE work in many vital areas has been assigned to us because of our Bell telephone experience. W.E. makes guidance systems for missiles (such as Nike Hercules, above) and has coordinated strategic projects including DEW Line, SAGE, and the communications aspects of BMEWS.

DISTRIBUTION is handled nation-wide by W.E. from 32 centers which store enough equipment to meet normal requirements and service emergencies of the Bell companies. These centers also serve as repair shops for reconditioning telephone equipment.

a complete line of
RF Connectors
Telephone Plugs
and Jacks



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New York Independents Hear Report On Proposed EAS Settlement Arrangements

A REPORT on proposed new extended area service settlement arrangements between the New York Telephone Co. and the Independents in the state highlighted the annual convention of the New York State Telephone Association at Schroon Lake, N. Y.

C. R. Lloyd, general manager of the Midstate Telephone Co., Manlius, N. Y., chairman of the association's Intercompany Operations Committee, advised the Independents at the convention that the New York company will provide the cable facilities to the connecting company's main frame, without the customary cable carrying charge to the midpoint between the two exchanges, and that a new EAS settlement plan based on a separations study is planned. He said he hopes that the new type of EAS contract can be recommended to the state association members by Sept. 1.

The new EAS settlement plan would be determined first by a separations study of all costs of the Independent exchange between Bell interchanged toll, Independent toll, EAS interchanged with the New York company, and the Independent's local services, he reported. Then separate revenue requirements for interchanged EAS and for local services would be determined, based on the costs developed in the separations study and the rate of return earned by New York Telephone in its state operations over the past few years. In the studies in the near future, 7% will be applied to net property allocable to EAS, Lloyd brought out.

Local revenues which would accrue to the Independent by applying New York Telephone subscriber rates for that size exchange would then be apportioned to EAS and local services in proportion to the revenue requirement developed for EAS and local services, he continued.

As a final step, the New York company will compensate the Independent for the difference between the Independent's EAS revenue requirements and the revenues assigned to EAS when the recomputation based

Officers of New York State Telephone Association elected during recent convention at Scaroon Manor, Schroon Lake, N. Y. L. to R. — W. MALCOLM GRISWOLD, treasurer; DONALD F. DAVISON, secretary-assistant treasurer; GEORGE S. BECKWITH, president; C. RAY LLOYD, vice-president, and HAMILTON A. CUNNINGHAM, executive secretary.

on New York Telephone local exchange rates is applied.

Lloyd stated the development stems from discussion about settlements for "second tier" EAS networks, but that the proposed settlement plan applies to all EAS arrangements in the state between the New York company and connecting Independents. He noted that among EAS benefits are benefits to subscribers from expanded toll-free calling areas, elimination of the cost of writing toll tickets, and elimination of the cost of sorting, billing, and collecting for the toll tickets.

Speakers at the New York association convention included Karl T. Dutschmann, New York Telephone vice president, and A. P. Hammel, assistant vice president of the New York company; New York association Executive Secretary Hamilton A. Cunningham; Foster B. McHenry, president of the US Independent Telephone Association; Retiring President Albert N. Seward of the New York association; and Counsel Kent H. Brown of the New York Public Service Commission.

Dutschmann, viewing the road ahead for the telephone industry, foresaw competition, and the need for services which will meet it, as perhaps the most significant "signpost" on the road. He emphasized the competitive impact of private microwave systems, various home and office communication systems, and pressures for connection of telephone company facilities to privately owned private branch exchange boards and other privately owned equipment.

To meet the competition, he declared, "We must and will give the customer completely satisfying and convenient service from his point of view. We must give him options on the types and amounts of service available to him, whether he is a large or a small customer. We must constantly explore the possibilities of making his service more and more satisfying to him."

Turning to the need for good profits to make service more attractive, Dutschmann commented that "We think we must earn a good profit if we are to achieve our goals of pro-progressive service and to meet com-

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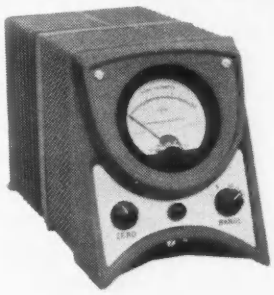
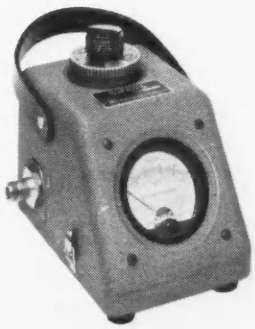
Model 160 50 ohm Coaxial Loads

Now including Models operating to 11 KMC, Sierra 160 Series low VSWR terminations may be used when stable 50 ohm loads are required. Featuring rugged design, high stability at full rated power, the loads have a typical VSWR of 1.2. All models are air-cooled and complete shielding insures personnel safety. Models with power capacities of 1, 5, and 20 watts are available with N, C and BNC connectors. 100 and 500 watt models Type N connectors. $20.00 to $170.00



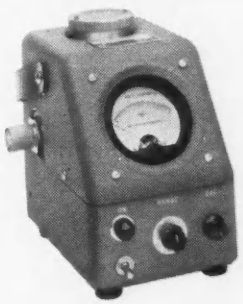
Model 185A Average-Reading Termination Wattmeters

Sierra 185A series are particularly useful in terminating rf coaxial transmission systems, measuring average powers between 20 and 1,000 MC, and as dummy loads for testing and adjusting CW and FM transmitters and oscillators. Three models with maximum power dissipation of 15, 100 and 500 watts, and power ranges of 0 to 5/15, 0 to 30/100 and 0 to 150/500 watts, respectively. Accuracy is ± 5% and VSWR is 1.2. Female Type N connectors. Model 185A-15FN, $170.00; 185A-100FN, $260.00; 185A-500FN, $315.00.



Model 164A Average Power Monitor

Sierra 164A Series Bi-Directional Power Monitors are now available with plug-ins down to 2 MC. Four plug-ins provide full scale ranges of 1, 5, 10 and 50 watts through frequencies 25 to 1000 MC. Two medium-power units provide full scale ranges 10, 50, 100 and 500 watts, 25 to 1000 MC. Two high-power units provide full scale ranges of 50, 100, 500, 1000 watts, 2 through 75 MC. Model 164 is now available with Type N, C, HN, UHF and LC connectors. Model 164, $115.00; plug-ins, $70.00 to $170.00.



Model 194A-A Bi-Directional Peak Power Monitor

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petition for the customers' available dollars. For us the problem is even more acute than for others, because we have one hand tied behind our backs through regulation, and have heavier than normal tax burden hanging around our necks,"

The profit theme was explored in more detail in an address by Executive Secretary Cunningham, who also emphasized that competition now "is more vigorous, more demanding, more challenging than we ever dreamed could be possible."

He urged a "new public climate" which would recognize the change in economic and social conditions "since the ground rules for regulation were established many years ago." Most of the same pressures that confront unregulated businesses also face telephone companies, he declared, noting that the latter's regulated status does not guarantee them a profit.

It is wrong, he declared, to assume that cost of capital is the dividing line between adequate and inadequate earnings. "No such dividing line is apparent among leading manufacturing companies," he continued. "By the same token, putting a low ceiling on profits in order to hold down prices is damaging to a telephone company. It is equally if not more damaging to customers."

In a separate report to the association on the activities of its headquarters office, Cunningham recalled the New York state law to take over the local telephone excise if the federal government had relinquished it. He said telephone people in New York were forced into the "extremely awkward position" of saying that if an excise is to be imposed, they are better off under the federal tax since compliance with the state law would have been considerably more difficult and expensive for the telephone companies in their role as tax collectors.

Hammel, who discussed protection against radioactive fallout, has been on special assignment with the state during the past year as chief of staff of the governor's committee on this subject. Chairman of the committee was Keith S. McHugh, retired president of the New York company and now state Commissioner of Commerce.

He concluded that "It is quite clear that protection from radiation is likely to become a way of life with us as well as, perhaps, an ultimate way of living. We in the telephone industry are traditionally out in front in thinking and planning ahead to meet new conditions, and this one is no exception. We can do much not only for ourselves but, as always, in the interest of the community."

Association President Seward's address, in addition to reviewing the events of his two terms in office, included criticism of the principle of the Rural Electrification Administration's farm telephone program and of the nation's present tax structure.

Counsel Brown's talk, which followed annual addresses of New York commissioners in past years, was a discussion of the role and accomplishments of the New York commission staff.

At the association's annual convention banquet, the New York Independents awarded a plaque to Spencer B. Eddy, a member of the New York Commission, and made him an honorary member of the New York State Telephone Association.

New officers elected were President, George S. Beckwith, Keeseville; Vice President, C. Ray Lloyd, Manlius; Treasurer, W. Malcolm Griswold, Phelps; Executive Secretary, Hamilton A. Cunningham, and Secretary-Assistant Treasurer Donald F. Davison, Spencerport. Named to the executive committee were George S. Beckwith, chairman; Albert N. Seward of Jamestown, and C. Ray Lloyd.

Directors re-elected for one-year terms were Frank Fancher, Middletown; William A. Kern, Rochester; William A. Seely, Norwich; and Albert N. Seward.

Re-elected for two-year terms were George S. Beckwith, and Fred Florance of Monroe.

Newly elected were Marshall K. Taylor, Johnstown, for one year, and Donald F. Davison, for two years.

Appointed to fill unexpired term of Robert Maytum, who resigned, was Roderick A. Nixon, Westfield.

Profits And The Telephone Business

(Continued from page 40)

we've got to have good earnings.

Moreover, higher, realistic profits are absolutely essential to our industry's future. We've become a very important part of the American scene. We're vital to the economy and to the defense of the nation. The growth of the telephone business — Independent companies and Bell System alike — has been a real American success story. A story built on profits, of course. No other way would have been possible, for they have provided the incentive and the means to grow, and to improve service as we've grown.

But our real test lies ahead. Despite all the growth and innovation in the past, the telephone industry is not receiving the kind of profits it needs to do an adequate job! These profits should be high enough to permit and encourage us to diversify, to innovate, and to create new products in the days and years ahead.

Most of all, I think, the telephone industry needs the elbow room and the freedom to take risks! In our quest for new and better ways to serve our customers and to satisfy their needs, the element of risk looms larger.

Risk is old hat to telephone people. I don't have to tell you that our business is one of continuing choices. We face vital decisions from day to day in our expansion, improvement and replacement programs. What size cable should we put in? How large should the addition to that central office be? Are we ready to introduce extended area service? But with each question, we have to stop and ask ourselves: Can we afford it? Can we afford to take the risks involved?

Properly made, our decisions can result in better service at lower rates. Good earnings encourage the proper decisions — they enable a telephone company to take the risks that have a good chance of paying off later.

Since the long range approach to spending is obviously the best, you may wonder why on earth any company would want to concern itself with the short pull. The answer's easy. Consider your own company. Faced with a costly project that may temporarily reduce earnings, wouldn't you be reluctant to go ahead if you were barely earning the cost of capital?

The cheapest way, unfortunately, often looks the best for a company that's just getting by — for a company that doesn't have high enough earnings to permit management to take risks that later will benefit the company and its customers.

Expansion and improvement have been difficult for some of these telephone companies. However, most progressive companies in non-regulated fields earn far more than the bare cost of capital. This is as it should be, of course. There's obviously no incentive in meager earnings. A minimum profit — one that just about lets a company squeak by — is not the type of financial prospect that fires us to do better. We're only human, after all. There is no question that we would like to get more out of our business than simply what we put into it.

Isn't it wrong, then, to assume that the so-called cost of capital is the dividing line between adequate and inadequate earnings? No such dividing line is apparent among leading manufacturing companies. In fact, many of them have been able to finance their expansion and replacement programs from depreciation expense and retained earnings. The cost of capital concept means little or nothing to them.

By the same token, putting a low ceiling on profits in order to hold down prices is damaging to a telephone company. It is equally if not more damaging to customers. It encourages costly inefficiency by destroying management's incentive to do the proper job and leads the company down the blind path of expediency. There is, for example, little reason for management to improve its operations if all the results are taken away from the company. In a case like this, public opinion and regulation punish management for its ingenuity and successful performance.

This would virtually oblige a company to rest on its oars when its profits reach the fixed return level.

In contrast, a company that is permitted to earn well can pass benefits back to the public in many forms, such as lower rates and better service.

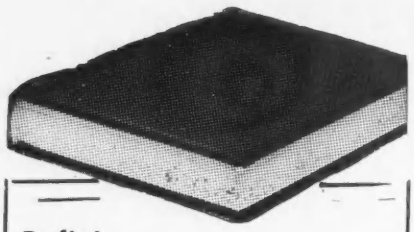
I've come across a pretty startling fact that illustrates this point: The Bell System operating company with the highest rate of return last year also had rates lower than most of its sister companies! There's something worth noting here — namely, that the public in the midwestern state where this company operates has recognized the value of good earnings. For several years this company has had the elbow room it needs to operate effectively. Today this freedom has resulted in a return to the public — not only in low rates, but in top-notch service as well!

The Value of Good Profits

HOW ARE we going to get a good profit? Fundamentally, I think that it's up to each of us. If we plan to measure up to non-regulated industry, we must show that we have the same drive, the same creative ability, the same conviction that marks the management of successful, progressive businesses. We'll have to induce a real competitive spirit within our companies to do the job properly.

We should establish long range goals for our companies and set out with vision and determination to bring our customers the very best telephone service possible. This will prove that we're really worth good earnings. We should also be willing to take risks in our search for better ways to serve, realizing, of course, that the level of earnings of your company, of the industry as a whole, will dictate how fast we can move ahead in this direction.

And finally, I believe that we must be convinced of the value of good profits. For if we're not, how can anyone else be? Only when we have convicition can we take a positive approach toward profit and give the public a clear and accurate picture



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of what really good profits can do for them!

I said a few minutes ago that the progress of the telephone industry has been retarded because our opportunity to make a satisfactory profit is limited — limited by a short-sighted view of our industry.

We've got a job to do. We must persuade the public to look at us in a different light — to look at far more than price alone. To look, for example, at how the telephone industry researches and develops new products; how a telephone company finances new ventures; how it expands service; how it improves the efficiency of its operations; how it combats obsolescence; how it adjusts to inflation; to look at the new and better jobs it creates as it expands and improves, the taxes it pays; the contribution it makes to the community, and the role it plays in the economy. In short, we've got to persuade the public to consider the over-all performance of a telephone company. This is, in fact, the way the public looks at a non-regulated business.

Regulation of this sort would stimulate still better performance by encouraging the functions and concepts of total competition as it works in the American economy today.

The result would be the higher earnings we so desperately need.

Based on far-sighted, sound management, a good profit today will lead to better telephone service tomorrow without inflicting upon future customers a burden which should be born today — profit, progress and performance are inseparable. — *Mr. Cunningham presented this paper at the 1960 convention of the New York State Telephone Association.*

"IT'S YOUR MOVE"

WE BOAST of our high standard of living and our creative genius and yet elect those who would remove individual incentive from the economic scene without which ambition and initiative will be stifled and our way of life destroyed. We prate of our freedom and seem wholly unaware that the chief cornerstone of individual liberty is the recognized right of the citizen to own property and make his own economic decisions.

How has this deplorable state of affairs come about? Well, Mr. American Business Man it has come about because you have done nothing to stop it! You have succumbed to the siren song of the cash-register bell and shut out the ringing appeal of the Liberty bell! You have thought and spoken of your government as They and forgotten that to function in accordance with the principles of Freedom it must be acknowledged as We! You have become a victim of amnesia on the history which gave birth to your liberty, and of "weakkneesia" on the controversies of the present.

There is a time limit on your right to hesitate in the game of politics, and you have been suffering the penalty of its automatic enforcement at every election. The forces of Socialism take advantage of every opportunity to move, and they "put you in check" at every opportunity. You have allowed him to take over for his own purposes the facilities of communication by which he advocates the ideas of collectivism, while you have thought you were nursing your dignity by silence only to find that the majority of those who were going to the polls did not interpret your silence in terms of dignity but of surrender.

Jefferson said that government is strongest of which every man feels himself to be a part. U. S. spells "US", not "THEM", and is the objective form of "WE". And the objective case indicates ACTION. Brother, its your move! — *Adapted from an address presented at the joint convention of the Oregon-Washington Telephone Associations by Dr. Orlo M. Brees.*

New officers and directors of California Independent Telephone Association for 1960-61 term. Seated (l to r): HARLAN W. HOLMWOOD, president; W. GILMAN SNYDER, first vice president. Standing (l to r): NEAL C. HASBROOK, secretary-treasurer; ALLAN R. STACEY, second vice president; DONALD H. STRAHL, director; J. P. MAGUIRE, director.

California Association Holds Annual Convention: Harlan W. Holmwood Elected Assn. President

SAN FRANCISCO was headquarters for over 600 members and guests attending the 41st Annual California Independent Telephone Association convention at the Fairmont Hotel.

At the opening convention session, the first speaker was the Honorable Everett C. McKeage, president of the California Public Utilities Commission, who discussed "Morality in Public Office." He told of a regulatory body that, during the trial of an important case before that body, saw nothing wrong with having luncheon in a public dining room with a top executive of one of the corporate parties to the proceeding before that body, who had been, also, a witness in the proceeding.

"That sort of thing does cause members of the public to grow cynical and suspicious of the faithfulness of a public officer," he said.

Discussing this subject, he added, brings to mind the regulator who seeks to defend questionable conduct on his part by asserting that he should be privileged to choose his friends, and who further asserts that he cannot be bribed for a few lunches or dinners, or a table radio, or a case of whiskey, or other allegedly small favors.

"It is most difficult," he said, "to understand how members of regulatory bodies can see fit to take lavish presents and entertainment from those whom they are supposed to regulate. It strains credulity to say that a person of discretion does not know better than that, and surely it is no compliment to a regulator to be offered such consideration at the hands of the regulated industry."

"In my judgment," he affirmed, "it is just as important for the regulated industry to plow an ethical course as it is for the regulator to do so. The end result of the ethical

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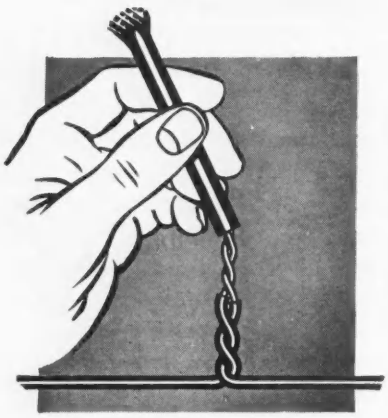

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course, in my opinion, will prove more profitable in the long run than the unethical course, even from the personal interest of the party involved. A public utility, being in the discharge of a public trust, is as much obligated, lawfully and morally, to observe ethical standards as is the regulator."

Directly after the talk by McKeage, Donald H. Strahl, president of the CITA, welcomed the assemblage to the convention and presented CITA highlights of the 1959-60 term of office.

The afternoon session featured two panel discussion groups, dealing with marketing and sales and profitable plant management problems. Heading the marketing and sales panel, George H. Gage, vice president — marketing and sales for General Telephone Co. of Calif., acted as chairman. He was assisted by Robert A. Dinsmore, California Interstate Telephone Co.; Russell Landrus, California Water & Telephone Co., and Allan R. Stacey, Sunland-Tujunga Telephone Co.

Dinsmore stated that marketing objectives include providing the customer with the service he wants and still making a profit for the company. Landrus stressed the need for every telephone company to strive for profit, using all the selling techniques available to the business world. He dwelt on good and bad ways to sell both in the business office and on contacts to business customers in the field. Stacey outlined the advancements in products on the drawing boards today and in actual laboratory models. He also dwelt on the importance of meeting competition in today's market.

The program was highlighted by a new and refreshing approach to panel discussions. The Little Players of the marketing and sales department of General Telephone put on a series of skits, emphasizing the main points of the talks. Participants included Vurjeene Rust, Jack Corrodi, Vic Cravello and a professional model, Beverly Bridges of San Francisco.

Concurrent with the marketing and sales panel, discussions by the profitable plant management panel were taking place. Chairman John H. Barrows of the California Interstate Telephone Co. introduced the other panel members: Kenneth Adams, Dos Palos Telephone Co., Inc.; Harold Bright, California-Pacific Utilities Co.; William G. Sebastian, Kerman Telephone Co., and W. Gilman Snyder, The Western Telephone Co.

Sebastian outlined methods where a small telephone company could cut costs and get the most out of its plant investment — hiring competent engineers, eliminating inefficient time habits, using smaller crews and applying economy in the use of materials and construction.

Harold Bright, in answer to the question, "What are we doing about making a profit?" said: "We are being aggressive — not waiting for the customers to come to us — but going to the customers — letting them know we can give them the best service — but that to get this service will cost money. Planned 'open houses' have been very effective."

Snyder highlighted his talk by stat-

"The Little Players" of General Telephone Co.'s marketing and sales department, WENTON STEWART, JACK CORRODI and VURJEENE RUST (l to r), act out problems presented by members of marketing and sales panel.

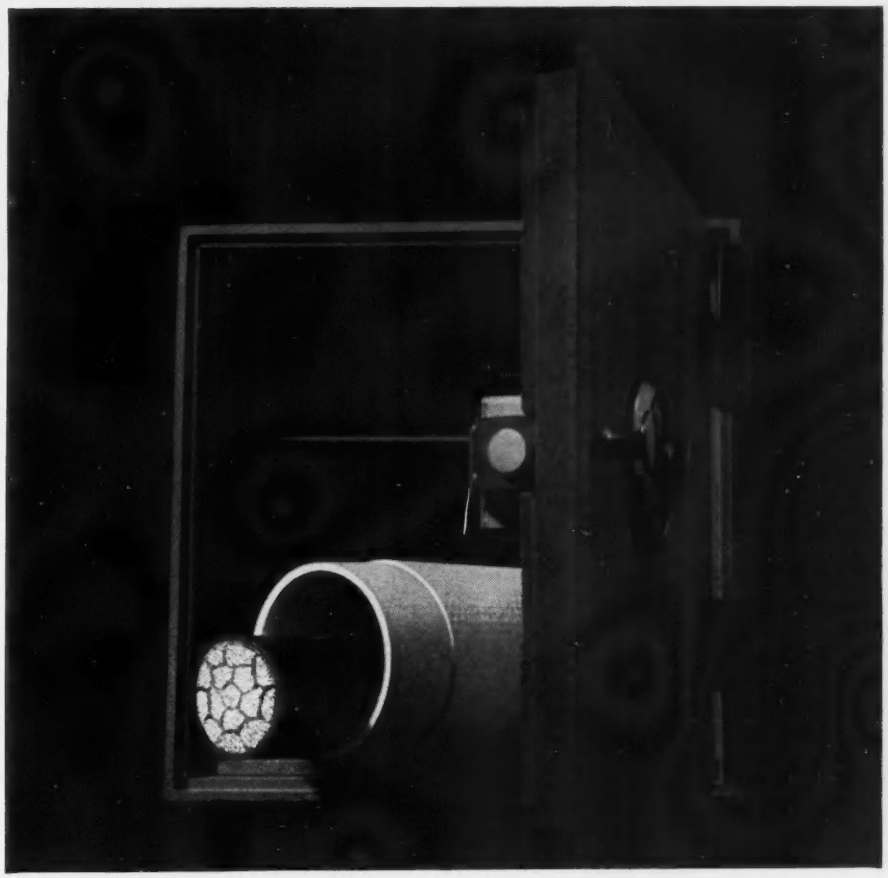
ing that among factors which cannot be disregarded "are the needs of the users of telephone service."

"Telephone users are requiring more and better service," he said, "and we cannot be indifferent to their requirements if we are to accomplish an adequate management job. With reference to the state and federal laws it might be well for all telephone management to review the State Public Utilities Code. Plant management, to be effective, must have sound commercial and traffic information upon which to base plant designs. Direct distance dialing is becoming imperative and plant requirements to be considered are adequate transmission, adequate intercept, higher ratios of individual lines to other grades of service and increasing dependability of service, with consequent need of better grade of construction of outside plant and the best central office equipment."

Adams discussed "Less Paperwork and More Profits," pointing out a way to make the most of an installation and repairman's eight-hour working day, showing where time is spent or lost and how to combat lost time — by taking the bookkeeping out of the installation and repairman's hands; having an accurate wire chief's routing sheet kept for the installation and repairman and keeping skilled men in the field where they can demonstrate their full worth.

The second morning session featured two panel discussion groups dealing with accounting and traffic problems. Heading the accounting panel, Robert A. Lindsay of Western California Telephone Co., acting as chairman, was assisted by Frank J. Cristich, California Water & Telephone Co.; John F. Donovan, California Public Utilities Commission; Perry L. Hunsaker, California Interstate Telephone Co., and Fred C. Mehl, Sunland-Tujunga Telephone Co.

Under the chairmanship of D. A. Perigo of West Coast Telephone Co., a group of speakers, including William Dales, California Interstate Telephone Co.; Mrs. Lois Dutro, California Water & Telephone Co., and H. R. Woodburn of the California-Oregon



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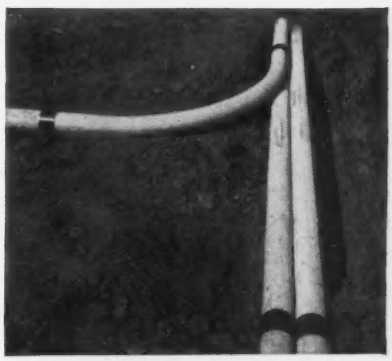

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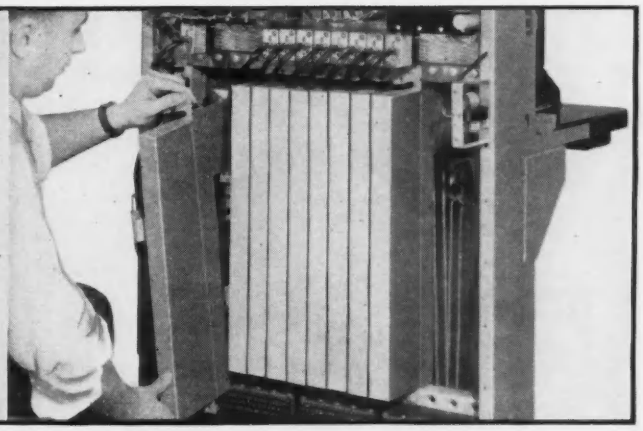

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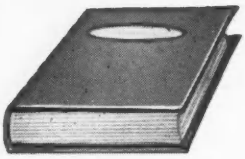

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— How to control delivery dates

Many new areas of production control such as operations research are treated in this book. Here are full explanations of several operations' research techniques including the simplex method using matrixes.

In addition, there is coverage of forecasting and its tie-in with the production schedule — learning curves and their effects on schedule making — converting a schedule into manpower requirements — the use of mathmatical formulas in inventory control — production control in multi-plant operations — and the use of electronic computers in controlling production.

You will find in this book a complete and up-to-date treatment of production control — with principles clearly and simply presented, ideas logically developed, and methods carefully described and illustrated.

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Telephone Company, comprised the traffic panel.

At the following session H. O. Davis, member of the nominating committee, representing Alden C. Knapp, chairman of the nominating committee, announced the new officers and directors for the 1960-61 CITA term. The office of president was assumed by Harlan W. Holmwood, executive vice president of General Telephone Co. of Calif. Other new officers include W. Gilman Snyder, The Western Telephone Co., first vice president; Allen R. Stacey, Sunland-Tujunga Telephone Co., second vice president, and Neal C. Hasbrook, secretary and treasurer.

Directors for the 1960-61 term were named as follows: Harlan W. Holmwood, General Telephone Co.; J. P. Maguire, Central California Telephone Co.; Peter A. Nenzel, California Water & Telephone Co.; J. Curtis Newman, Coachella Valley Telephone Co.; W. Gilman Snyder, The Western Telephone Co.; Allan R. Stacey, Sunland-Tujunga Telephone Co., and Donald H. Strahl, Gilroy Telephone Co.

After the announcement of officers and directors, Stary Gange, consultant for Southern California Gas Co., presented a talk entitled, "Tomorrow Will Be A Busy Day."

In relating his recent attendance at Soviet Premier Khrushchev's talk before San Francisco dignitaries and the press, Gange stated: "This is the time for some old-fashioned flag waving. I watched Khrushchev transform an antagonistic, stoic American audience to one of clapping glee . . . Here was one of the most dangerous men in the world playing a big, jolly Santa Claus . . . and doing it convincingly. We must remember this is the same man who once said someday he would bury us. He will, if we continue to be lazy and morally lax. To keep America awake and alert, we must challenge the right people and to do this we must place more impetus on the importance of education. We must honor young people who have high scholastic ratings and raise the standard of appreciation for intelligence among our young people."

Final speaker, Major General John D. Stevenson, Commander, Western Air Defense Force, of Hamilton Air Force Base, California, presented his address entitled: "Air Defense of the North American Continent."

Traffic panelists answer questions posed by audience during their panel meeting at California convention. From left to right: H. R. WOODBURN, California-Oregon Telephone Co.; WILLIAM DALES, California Interstate Telephone Co.; Chairman D. A. PERIGO, West Coast Telephone Co.; and Mrs. LOIS DUTRO, California Water & Telephone Co.

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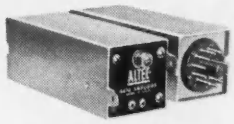
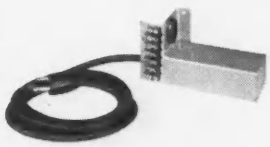
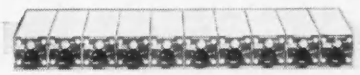
The best number in your book—the one that connects you with the Altec line. For performance, reliability, and servicing ease, the Altec line of amplifiers and equipment have won a resounding vote of confidence from the industry. Precision-engineered to meet your most exacting specifications, Altec products offer the improved design that makes maximum use of minimum space—and the "plus" that makes the difference—Altec quality.



The 455A Amplifier is a transistorized repeater type amplifier wrapping up a compact package of gain for telephone circuit use. Incorporates the gain, power handling capacity, frequency response, plug-in features in the physical size of vacuum tube type repeater. Ten repeaters go in the same standard rack mount used for vacuum tube types. Operates on 48 volt DC @ 22 ma: (453A model operates on 24 volt DC). Since it is transistorized no 130 volt supply is needed. For details, write for Altec Lansing Bulletin #13385.

The 533 Power Supply is designed to fit within a 105-B Apparatus Box. The power supply bracket includes the required socket and space to mount a single ALTEC transistorized repeater type 449, 450 or 453-A and, at reduced power, the 447-A. Operating from 117 volts AC the unit delivers 20 v at 25 ma. Write for Bulletin #13132.





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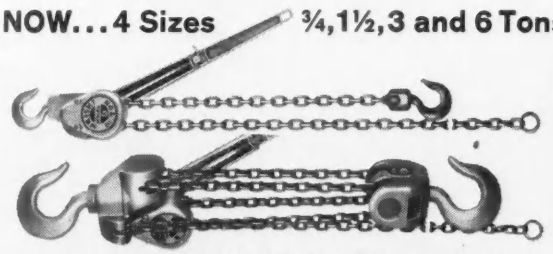

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Panel type. Two 300-500 volt, plug-in tubes; two 6-amp, auto-reset circuit breakers. Each tube discharges its respective line (power or telephone). Circuit breakers also serve power line and prevent follow-up arcs from normal current.

TYPE 167X1
For Telephone Lines

Single-tube, single-pair protector. Plug-in type, 300-500 volt tube. Bracket mounting, snap-on weather-proof cover. For carrier lines and drop side of subscriber carrier terminals.

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Oregon-Washington Independents attend general session of the Oregon-Washington convention at Portland, Ore.

Participants in the Oregon-Washington convention's Open Forum are (l to r): AL PERIGO, general traffic manager, West Coast Tel. Co., Everett, Wash.; HERALD CAMPBELL, director of public relations, Pacific Power & Light Co., Portland, Ore.; JAMES W. DAMON (chairman), president, Oregon Tel. Corp., Mt. Vernon, Ore.; ROBERT RINGMAN, general manager, Skagit Valley Tel. Co., Mt. Vernon, Wash.; RAY FOUNTAIN, chief accountant, Washington P.S.C., Olympia; and LESTER E. SCOTT, OITA president, Lebanon, Ore.

Naylor Discusses "Competitive Fronts" At Annual Oregon-Washington Meeting

"THERE are few enterprises in our society that are fighting harder or on more competitive fronts than the telephone business," J. T. Naylor, International Telephone & Telegraph Corp. vice president, emphasized in an address before the annual meeting of the Oregon and Washington Independent Telephone Associations in Portland.

Naylor declared that "Telephone management is struggling competitively in three broad areas embracing innumerable day-to-day skirmishes. These are in the financial sector, in the talent sector and, of more recent years but on a 'hot war,' basis, in the marketing sector. Competition, when it is not squarely and properly met, is the pressure which sells out companies, forces other companies into defensive stagnation, and degrades public service standards and adequacy."

Successful competition for money "primarily demands four basic areas of attack — (1) persuasion in the field of regulatory understanding and perception, (2) conscientious selling of stability on a long-term basis, (3) foresight in maintaining an 'open end' financial climate, and (4) alertness in management and operations to keep all capital resources busy, to the exclusion of obligations on idle funds or property," the ITT official commented.

Turning to competition for management talent, Naylor said that in the telephone field there is a traditional pride in "professionalism and not enough of the mercenary in our approach to recruiting and holding on to talent."

"It is time," he said, "for the industry to raise its sights in this area and, except for such fields as entertainment, executive level compensation should match the best — not

Please turn to page 72

JAMES W. DAMON, president-elect of the Oregon Independent Tel. Assoc. (OITA), discusses Oregon-Washington convention with LESTER E. SCOTT, retiring OITA president, and DON GIBBS, OITA vice president-elect.

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the extravagant — but the best salary levels in our communities."

He pointed out that "To find a favorable comparison or produce one, income has to be generated to dignify salaries and career conditions which match the best. This is an unending challenge. Competition for talent is getting tougher and hotter as new and similar employment opportunities are multplying in an age of science and automation."

Discussing marketing and service competition, Naylor commented that "Business institutions and governmental organizations have reached a size in the United States, even on the

WILLIAM GRAEPER, a director of the Oregon Independent Telephone Assoc., was confined in a hospital with a broken leg during the recent Oregon-Washington convention. However, he participated in all meetings via a two-way hookup.

small city level, where they want and insist upon the best and latest communications. Are any of your local business neighbors doing things for themselves or under contract with others that the telephone company should be doing? How about the industrial and perhaps even residential intercommunication systems and signaling systems? Are you serving all of the mobile and private needs of your police departments and fire departments? How about the taxis and delivery accommodations?

"Your connecting companies are fighting a competitive battle in the leased line, TWX, and data transmission fields. Are you an interested part of this?"

He urged even the small companies

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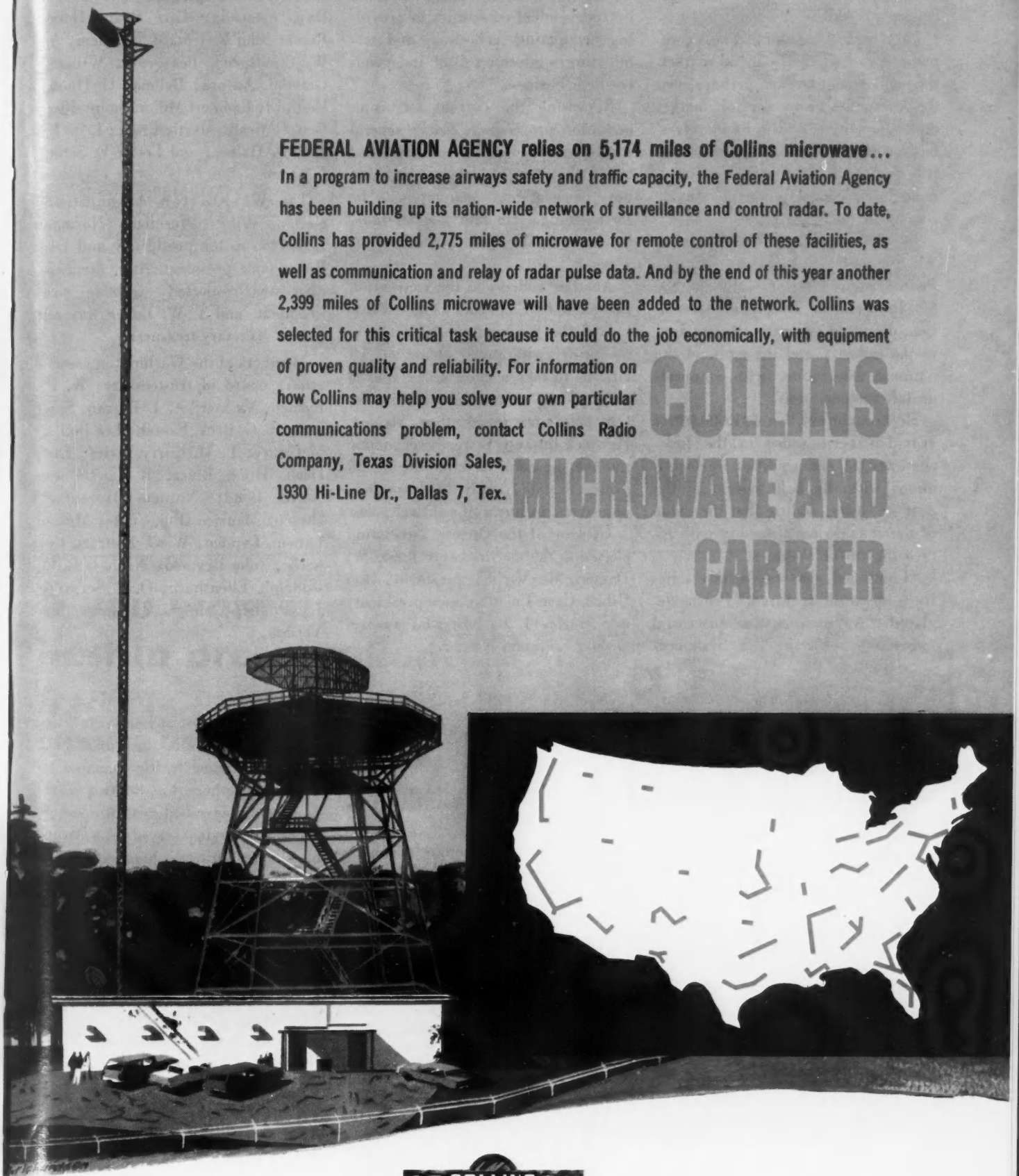

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to "go after the government business," remarking that "Here is an area where the resources of your suppliers should be mobilized and aid of the best industry contract and legal counsel should be enlisted."

Large industrial and business companies can "hit the financial market, the employment market, perhaps even the communications service market on a competitive 'do it for themselves' basis with strength which sets standards that successful telephone management is compelled to meet," Naylor concluded.

In another address to the Oregon-Washington Independents, C. C. Pearce, first vice president of the US Independent Telephone Association, discussed generally the situation in the industry and the work of the national association, with emphasis on toll compensation.

He brought out that $41,000,000 a year has been added to the Independents' toll compensation by negotiations with the Bell System in the past six years, adding that the value of the changes rises steadily with increasing traffic volumes.

"Continued alertness in this activity is obviously required," Pearce declared. "As soon as one successful negotiation with the Bell System is completed, the association must begin new studies to lay a foundation for further demands. This is made necessary by the constantly increasing costs which are being incurred by Independent companies in providing originating, collecting, and terminating services on joint Independent-Bell business."

Reviewing the current toll compensation proceedings before several state commissions, Pearce expressed belief that "regulatory approval of our (separations) manual will be forthcoming." He said that all Independents would "greatly benefit" as a result.

Another address to the convention was made by Chairman Francis Pearson of the Washington Public Service Commission, who called on all citizens to take a more active role in politics and greater interest in the type of government they receive. Political interest is really economic interest, he continued, in urging all groups to state frankly their economic objectives, in terms of political goals.

Officers of the Oregon association elected at the meeting were James W. Damon, Mt. Vernon, president; Don Gibbs, Cave Junction, vice president; and Harley J. Barber, who was re-elected secretary-treasurer.

OITA directors are: M. F. Berglund, Oceanlake; Lowell Brown, Silverton; Raymond M. Crockett, Redmond; Lyle Cross, Beaverton; Rodney Cummings, Philomath; Floyd Day, Estacada; Earl Dean, Hood River; John H. Dillard, Nehalem; A. W. Goodspeed, Beaverton; William Graeper, Aurora; Dellman O. Hood, Medford; Lambert Miller, Sunnyside; Geo. O'Mealy, Myrtle Creek; Leon L. Roome, Halsey; and Lester E. Scott, Lebanon.

The Washington Association elected Vice President Norman Howerton to the presidency and Lee Bolles, vice president. A. J. Zimmerman was re-elected executive vice president, and J. W. Baker was re-elected secretary-treasurer.

Members of the Washington association's board of trustees are: W. F. Barnett, Vashon; A. J. Barran, Spokane; L. G. Beck, Everett; Lee Bolles, McCleary; L. M. Curry, Yelm; Earl Dean, Hood River; B. L. Gaines, North Bend; Norman Howerton, Ilwaco; Maurice Hull, Forks; Milton Larson, Lynden; W. G. Pottratz, Cowiche; John Reynolds, Naches; R. E. Rudolph, Ellensburg; O. E. Serwold, Jr., Poulsbo; and G. J. Stover, Mt. Vernon.

John Patrick Boylan Succumbs at 84: Headed Rochester (N. Y.) Telephone Co.

JOHN PATRICK BOYLAN, whose 67-year telephone service career virtually paralled the development of the communications network in America, died July 19 at Rochester, N. Y. He was 84. Mr. Boylan had been ill three months.

He rose from a $1-a-day timekeeper for the Cleveland Telephone Co. in 1892 to president of the Rochester (N. Y.) Telephone Corp. in 1927. He retired in 1946 and became chairman of the board. He resigned May 1, 1959, and was named honorary chairman.

From his humble hometown start, Mr. Boylan moved through almost every job in the expanding telephone field in six cities before he joined the Rochester Telephone Co. in 1921 as vice president and general manager.

When Mr. Boylan started on a timekeeper's job on a subway gang, also in 1892, this country had only 216,017 telephone subscribers — fewer than the Rochester Telephone Corp. on his retirement last year. By 1959, the nation counted 63,620,862, subscribers and Rochester had more than 275,000.

From timekeeper Mr. Boylan moved up until, in 1904 he was made traffic manager at Cuyahoga Telephone Co. in Cleveland. In 1906 he took the same post at Louisville Telephone Co., remaining there until 1908 when he became traffic manager at Detroit Telephone Co. for two years.

As an independent consulting engineer, Mr. Boylan served as a "trouble shooter" for telephone companies in Louisville, Galesburg, Ill., and the Province of Manitoba, Canada, in 1911-12. He then served as general manager of Northern New York Telephone Co., Plattsburgh, from 1913 until 1921 when he became general manager at Rochester.

Before leaving Plattsburgh, Mr. Boylan designed the first underground Army target range.

Mr. Boylan blended diverse civic, financial and charitable interests in his daily routine as an executive at Rochester Telephone.

He was president of the Platts-

(Please turn to page 79)

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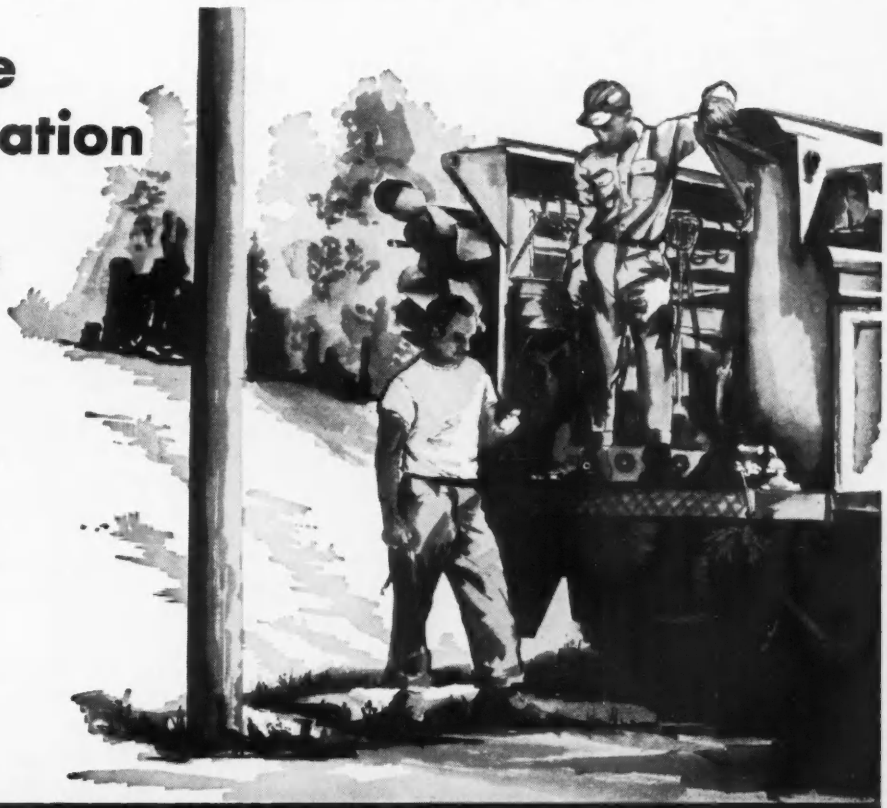

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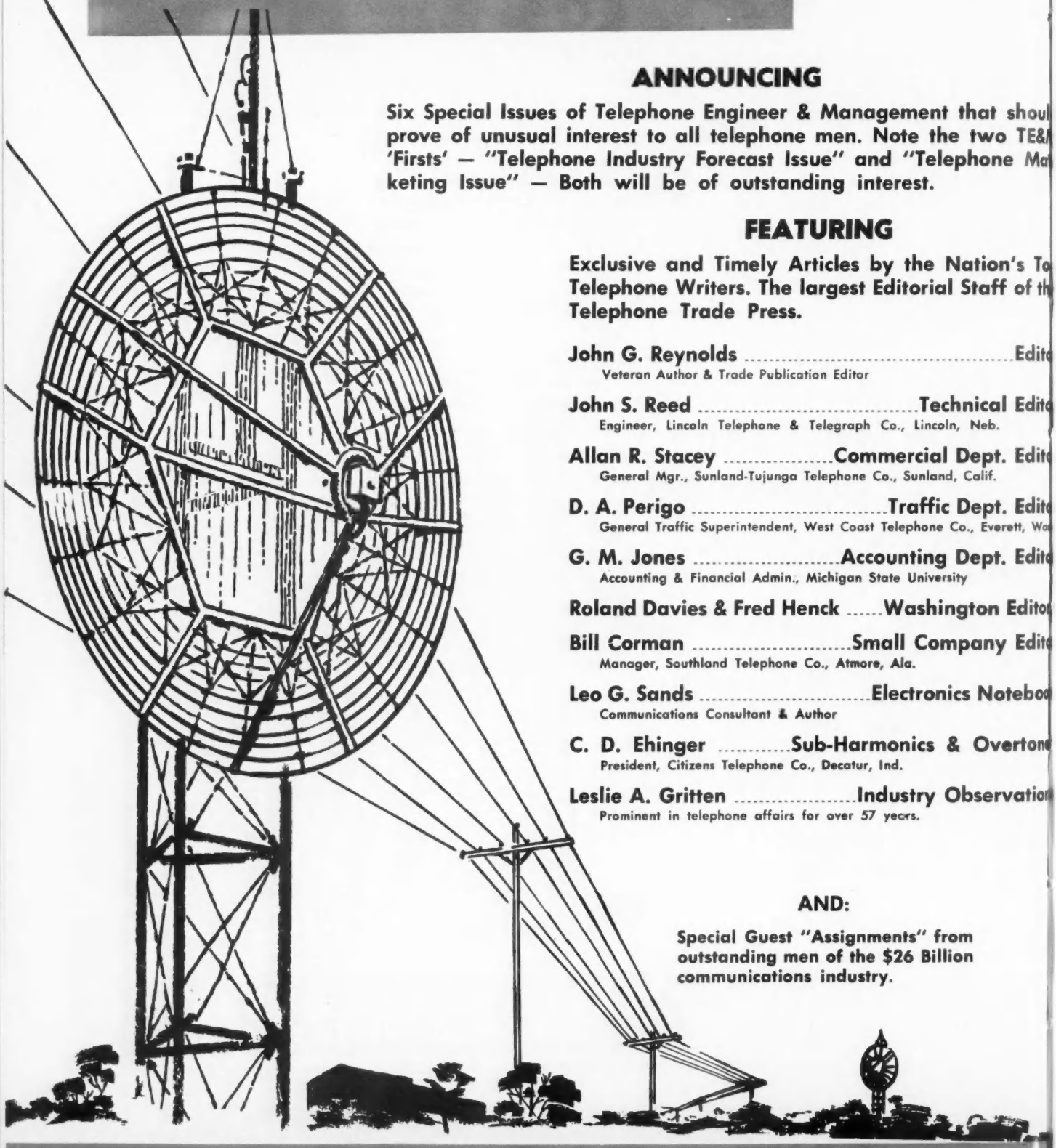

ANNOUNCING

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FALL CONSTRUCTION ISSUE – SEPTEMBER 15, 1960

Timed to serve Telephone men with practical ideas for the Fall & Winter. "How much outside plant do you need?" "What about the central office equipment?" "What is the effect on total company earnings?" . . . some timely and interesting questions presented by Allan R. Stacey in a Sept. 15 exclusive – "Measuring For Growth." John S. Reed, TE&M's Technical Editor, will bring readers up-to-date on methods of placing buried telephone plants in areas where they are economically feasible. Standard types of wire & cable for burial use, terminals, pedestals, and metal guards are described. Improved types of cable & wire laying plows and trenchers are covered – it's all in "Progress With the All-Buried Telephone Service Concept." This issue will be read and re-read by telephone men.

NAT'L. TELEPHONE CONVENTION PREVUE – OCT. 1, 1960

This special issue will reach all TE&M subscribers by October 1, and it will present the most complete, comprehensive published prevue of the 63rd annual Convention of the United States Independent Telephone Association (USITA) to be held at Chicago's Conrad Hilton Hotel – Oct. 9, 10, 11, 12. Copies of the issue will also be distributed among the 3,500 telephone men and women expected. Here's what's planned editorially – "USITA Convention Prevue Section." This big illustrated section will present (1) The Convention program; (2) An invitation from USITA president, Foster B. McHenry; (3) Data on speakers, USITA officers, and convention activities; (4) A complete list of convention exhibitors; (5) A preconvention report from the Chairmen of 5 major USITA committees; and (6) Information on entertainment and program planned for the annual meeting of the Independent Telephone Pioneer Association which will be held during the National Convention – plus exclusive features by Leon F. Roberts, USITA's Director of Information; L. A. Gritten, "Conventions & the Little Independents"; T. DeWitt Talmage, "How To Get 'The Most' Out of a Convention."

NAT'L. TELEPHONE CONVENTION REPORT – OCT. 15, 1960

Here's an Issue actually written, edited and put to press during the Convention. In fact, it's so timely it's in the mails to our 13,845 readers 3 days after the Convention ends. It's a complete word and picture story of USITA's 63rd annual convention. This Issue will feature Reports on conferences held during the convention on – Accounting, Commercial, Engineering, Plant, Traffic, REA, etc.; New USITA officers and directors; addresses delivered by speakers at the general convention sessions; Convention Highlights; coverage of the annual meeting of the Independent Telephone Pioneer Association, plus scores of exclusive TE&M photos. The convention in print is our aim.

TELEPHONE INDUSTRY FORECAST ISSUE – JAN. 15, 1961

This issue will be another "First" for TE&M and the Telephone Industry. TE&M's writers will look at 1960 in terms of growth, earnings, technological advances, significant trends in legislation, regulation, labor, operating costs, financing, etc. and will forecast for 1961. Here's just a sampling of exclusive features which will be included – "Comparative statistics between the Bell System & Independent Segments on Over-All Growth – Stations, Plant Investment, Revenues and Earnings"; "1961 and The New Look in Telephone Plant"; "Increased Load for Traffic in 1961"; "Washington and the Telephone Industry in '61" – just to mention a few. TE&M's exclusive "Telephone Industry Forecast" will also present tables, charts, statistics and articles that will tell where the Industry has been, where it is, and where it is going. It's designed to be an invaluable reference book for both Telephone operating people and the suppliers of telephone equipment and supplies.

SPRING CONSTRUCTION ISSUE – APRIL 15, 1961

Here in one big issue the editors of TELEPHONE ENGINEER & MANAGEMENT will present a complete guide to "what's new in telephone construction and maintenance methods." Featuring articles prepared *exclusively* for TE&M by members of the telephone industry, the April 15, 1961 issue of TELEPHONE ENGINEER & MANAGEMENT will discuss (1) "Getting The Most From Your Construction Dollar" – a review of modern, cost-reduction methods . . . (2) "New Developments In Construction Equipment" . . . (3) "Maintenance Procedures That Eliminate Trouble Reports" . . . (4) "Stop Spring Construction Accidents" . . . and (5) feature departments written by TE&M staff members discussing construction as it relates to each department – accounting, commercial, engineering, plant, traffic.

TELEPHONE MARKETING ISSUE – JULY 15, 1961

The July 15, 1961 issue of TELEPHONE ENGINEER & MANAGEMENT will be entirely devoted to telephone marketing. Articles prepared for exclusive publication by working members of the telephone industry will discuss (1) Underdeveloped potentials in the areas of service to residences, small business establishments, large business establishments, toll users, special service users; (2) New products and services for marketing; (3) New objectives for commercial forecasting; (4) The changing shape of services and instruments; (5) Sales training methods, and (6) Techniques of selling telephone service.

THE YEAR'S SIX OUTSTANDING ISSUES - WATCH FOR THEM !

"THESE TWO CLEAN HANDS are two more good reasons why I'd rather work with PENTA-treated poles and crossarms"

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(Continued from page 74)

burgh and Rochester Chambers of Commerce, the New York State Independent Telephone Assn. in 1939, the United States Independent Telephone Assn. in 1944, the Rochester Community Chest, Rochester Council of Civic Clubs and the Rochester Automobile Club. He was a director of Rochester Business Institute, Inc.

Mr. Boylan was treasurer of the Rochester Convention & Publicity Bureau Inc., in 1950, and former director at Highland Hospital.

At the time of his death, he was a director at Lincoln Rochester Trust Co., Rochester Gas & Electric Corp., Rochester Community Baseball, Inc.

JOHN P. BOYLAN

(the Red Wings), the Columbus Civic Center, Rochester Institute of Technology, the Automobile Club of Rochester Convention & Publicity Bureau, Inc. and a member of the Advisory Council, Community Chest of Rochester and Monroe County and Board of Trustees, Rochester Chamber of Commerce.

In 1942, Mr. Boylan was appointed to the War Production Board as representative of telephone executives. Two years later he was head of the special gifts committee of the Negro College Fund at Rochester.

Despite the time-consuming activities, Mr. Boylan found time to amuse — as an amateur magician and as author of a 1952 book, "Tales of the Nineties," composed of whimsical stories he wrote for the *Telephone*

Built-in, Pre-loaded Shock Absorber In Boom
Cushions the Shock But Doesn't Absorb the Power!

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IS DESIGNED FOR 9 OUT OF 10 TRENCHING JOBS

The new self-propelled Davis T-66 is designed and produced to handle 9 out of 10 trenching jobs after an exhaustive survey to users revealed what they wanted.

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The Davis T-66 is both a trencher and a backfill machine. For trenching it features positive traction, hydraulic variable speed drive, accurate speed control, hydraulic operated boom, and convenient — virtually effortless — operation. It digs 3″ to 4″ wide to 66″ deep; or 12″ wide, 30″ deep, and at varying widths and depths in between. Only **two tooth combinations handle all digging widths.** Trenching speed is from 1-ft. to 12-ft. per minute depending upon soil conditions. The low-cost angle backfill blade attaches to the boom and is hydraulically controlled. The T-66 has two-speed drive with instant forward or reverse, powered steering, independent left and right positive clutches and disc steering brakes for maneuverability in backfilling operations. Compact and only 37″ wide, every one of its 1350 lbs. is packed with performance. Quality is built in every part. Still, it is priced less than you would expect. ASK ABOUT ITS 90-DAY UNCONDITIONAL GUARANTEE.

THE DAVIS PUP

digs by itself where others won't because it is self-propelled by a positive 6-speed winch drive. Digs 2″ to 3″ wide to 36″ deep or 4″ wide, 18″ deep.

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Davis Hustler Utility Trailer____

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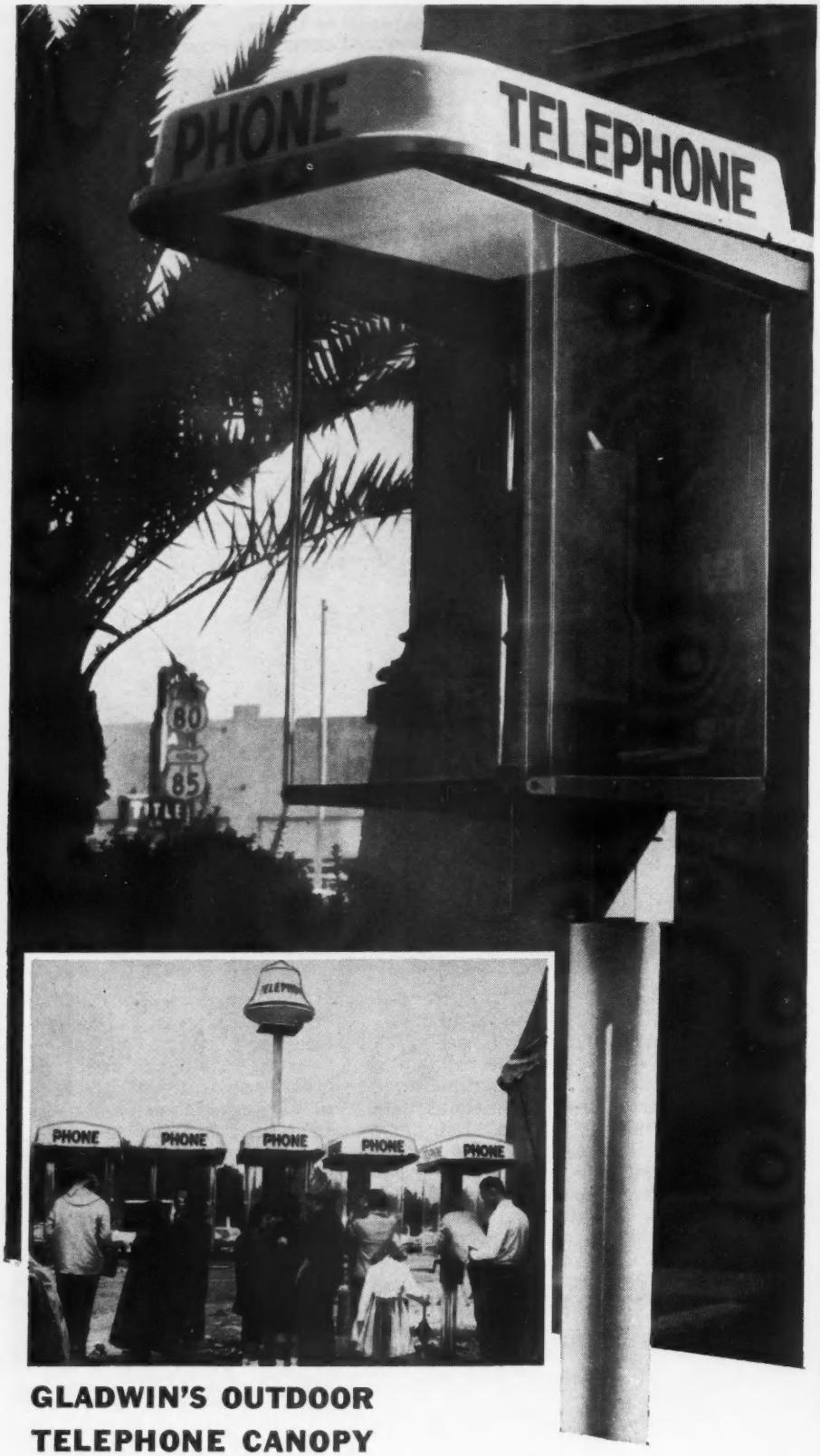

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Engineer And Management magazine, and "A History of Telephony in Rochester," in 1953.

Mr. Boylan, born Dec. 19, 1875, was the son of Terrence Patrick Boylan and Mary McAneny Boylan. His father was superintendent of parks in Cleveland. His mother's brother, Philip, founght in the Battle of Balaklava, Crimean War, 1854, better known as the "Charge of the Light Brigade."

On Feb. 10, 1912, Mr. Boylan married Alma Elizabeth Wilson. She died in June, 1955.

Mr. Boylan held memberships in the Rochester Engineering Society, Oak Hill Country Club, the Rochester Club, which he served as a director, the Knights of Columbus, Knights of Equity and was a former member of the Genesee Valley Club. His hobbies were bowling and golf.

He was a Republican, but was not politically active.

He is survived by two sons, Alfred George, a Rochester attorney; Dr. John Wilson Boylan of Buffalo; and a daughter, Mary Elizabeth Boylan of New York City.

Kelly Advanced By Sunland-Tujunga Tel. Co.

NOEL KELLY, employed by the Sunland-Tujunga Telephone Co. in 1952 as switchman, was recently named plant supervisor, it has been

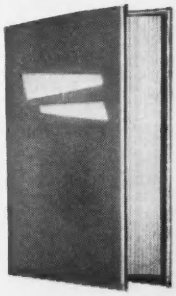
NOEL KELLY

announced by vice president and manager, Allan R. Stacey.

Kelly was born in Ottawa, Ontario, Canada, in 1912 and attended grammar school and high school there. He graduated from Lisgar Collegiate in 1929 and began his telephone ca-

HOW TO APPLY STATISTICS TO ENGINEERING DATA

—for more complete, accurate analysis



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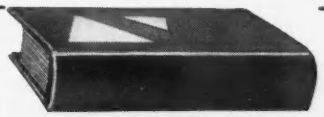

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ELECTRONIC SEMICONDUCTORS

as related to rectifier and transistor problems

By EBERHARD SPENKE

Here is a rigorous and systematic introduction to semiconductor physics, developing the subject in a logical and consistent manner from simple concepts, and giving clear pictures of the conduction mechanism of electronic semiconductors within the framework of the *band model.*

The careful derivation of important relationships from precisely defined basic concepts and assumptions is one of the book's outstanding features. Others are the treatment of the acceleration of electrons; the treatment of the Zener effect; and the chapter devoted to statistics and kinetics of electrons as modified by electrostatic potentials. Germanium is the prototype substance used in all discussions of semiconductor behavior. All material on the conduction mechanism of semiconductors applies equally to thermionics, luminescence, and photoconductivity.

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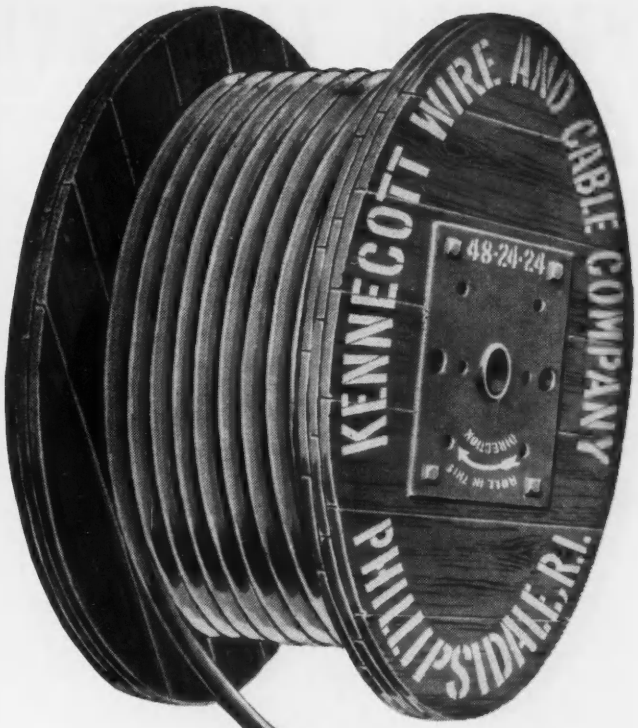

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BIG CAPACITY, SMALL DIMENSIONS — the 77 delivers up to 21 lineal feet of trench per minute, yet isn't much wider than a yardstick. Ideal for close-quarter work.

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reer the same year with Bell Telephone of Canada. His telephone work was interrupted by the depression but he returned to Bell in 1936 as cable splicer and installer.

He joined the R.C.A.F. in 1941 and served at Western Air Command Headquarters during World War II as telephone equipment officer. After the war he returned to Bell and held various plant positions until 1949 when he joined California Water and Telephone Co. He joined Sunland-Tujunga Telephone Co. in 1952 and has held the positions of switchman, cable splicer, cable splicing foreman and engineering supervisor.

His duties as plant supervisor include supervision of outside plant construction and maintenance.

United Utilities Increases Operations in Pacific N. W.

UNITED UTILITIES, Inc., second largest Independent telephone system in the nation, has increased its operations in the Pacific Northwest with acquisition of Northwest Telephone Co., C. A. Scupin, president, has announced.

Shareholders of the Northwest company will receive 26,843 shares of United Utilities common stock in exchange for the assets. The merger was effective July 1.

Northwest serves about 5,000 telephones through six exchanges in central Oregon. The exchanges at Redmond, Sheridan, Willamina, Culver, Grand Ronde and Sisters are all dial operated, employing completely modern equipment, Scupin said. An automatic toll ticketing installation at Redmond permits subscribers to dial toll calls without assistance of telephone operators. Northwest was first company in Oregon to provide network subscriber toll dialing service, he added.

Northwest has total assets of $1,250,000. Revenues last year were $436,500. It will be part of Oregon Washington Telephone Co., a wholly owned subsidiary of United, which had about 30,000 subscribers prior to the consolidation. The United System presently serves about 480,000 customers in 15 states.

The Northwest company had been

headed by James M. Wells, president. Raymond M. Crockett was vice president and general manager. Wells will retire from active management to other business interests in Redding, Calif. Crockett will assume other managerial responsibilities with the United System. The remaining personnel will report to Earl R. Dean, president of the Oregon-Washington Co.

Ure Named Chief Engineer, Sunland-Tujunga Tel. Co.

WILLIAM J. URE, employed by Sunland-Tujunga Telephone Co. in 1947 as equipment superintendent, was recently named chief engineer, it has been announced by vice president and manager, Allan R. Stacey.

Ure was born in Toronto, Canada, in 1904. He attended Lincoln Engineering School, Lincoln, Nebr. and has completed several night courses in electricity, drafting and electronics.

He first started work in the telephone industry as station installer for the Bell System in 1925 and was later employed as lineman and repairman for the California Interstate Telephone Co., Bishop, Calif., and as wire chief for the Oxnard Home Telephone Co., Oxnard, Calif. In 1947 he joined the Sunland-Tujunga Telephone Co. as equipment superintendent at the time the company was converting from manual operation to dial and automatic toll ticketing. His duties included engineering, installation and maintenance of central office equipment.

W. J. URE

In his new position as chief engineer, he is responsible for the engineering, installation and maintenance of both outside and inside plant.

Roscoe Pontius Retires: Succeeded By J. H. Schultz

ROSCOE D. PONTIUS, vice president and general manager of the Rochester (Ind.) Tel. Co., retired August 1. Pontius joined the Rochester company in 1912 as a lineman and trouble shooter. In 1934 he was named general manager and in 1959 he was elected vice president, succeeding his father, Tully Pontius.

Active in state and national telephone association activities, Pontius was elected president of the Indiana Telephone Association in 1950, and was a director of the association from 1934 to 1958.

J. H. Schultz, former division man-

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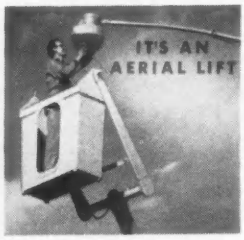

- 3 mounting positions—left rear, right rear, behind cab.
- Full 360° horizontal arc sweep.
- 8,000 lbs. max. cap. (2,000 lbs. min.)
- 30′ sheave height—sets up to 65′ poles.
- High tensile steel in box-type boom for greater strength.
- Diggers **stows** with main boom, **digs** with either section. Digs close (12½′) or far out (21′); an 8½′ horizontal range of action.
- Controls built into base (Optional mountings available).
- Available with optional fiberglass basket for use as aerial lift.
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- Power digger stows—unstows **automatically.**

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NATCO CLAY CONDUIT, economical to install and maintain, is the low cost way to give Underground Telephone Cables permanent protection. Available in a full line of shapes.

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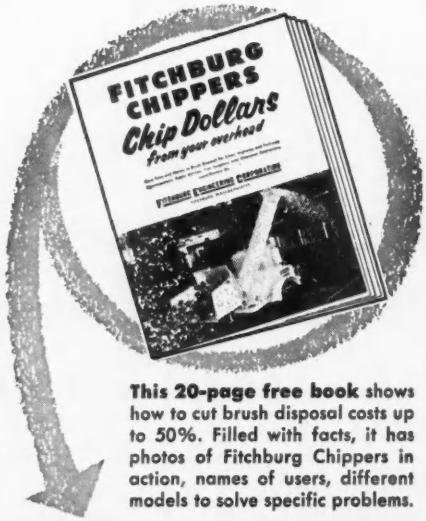

This 20-page free book shows how to cut brush disposal costs up to 50%. Filled with facts, it has photos of Fitchburg Chippers in action, names of users, different models to solve specific problems.

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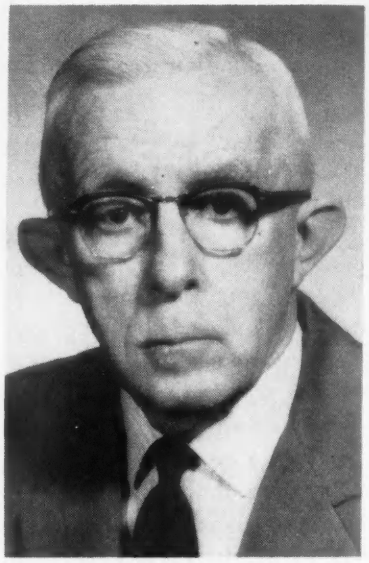
ager of the General Tel. Co. of Indiana, Richmond, has been named to succeed Pontius as vice president and general manager of the Rochester company.

Schultz joined the telephone indus-

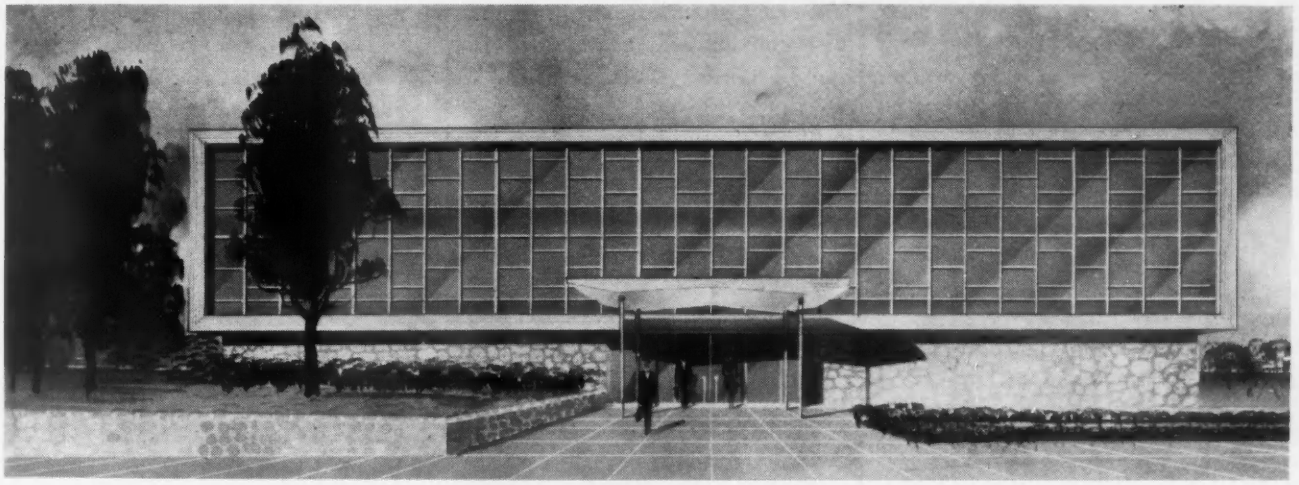


R. D. PONTIUS

try in 1945 as a commercial representative with the Northern Indiana Telephone Co., now a part of General Tel. Co. of Indiana. He joined the Richmond (Ind.) Home Tel. Co. in 1950 as public relations manager. Later he was named general man-

J. H. SCHULTZ

ager of the company. When the Richmond company was acquired by General, Schultz was named division manager of the Southern District.



New office building to be built for Copperweld Steel Co., Wire and Cable Division, Glassport, Pa. The target date for completion is the spring of 1961.

Copperweld To Have New Office Building

CONSTRUCTION has started on a new 3-story office building in Glassport, Pa., for the Wire and Cable Division of Copperweld Steel Co., it was announced by F. E. Leib, vice president in charge of that division. The new building will cost approximately $250,000 and will be located on Ninth Street facing Monongahela Avenue.

Leib said the building, designed by Batillo & Loretta, Pittsburgh architectural firm, will feature window-wall construction with stone facing on the ground floor. The new structure will contain approximately 15,000 sq. ft. of space and will house the Wire and Cable Division's headquarters staff.

Bess Construction Co., Elizabeth, Pa. has been given the construction contract. The target date for completion is the spring of 1961. The new building will replace several old office buildings located nearby on the plant property.

Announce Changes in Leich Switchboard Dept.

D. C. GIBSON, president of Leich Sales Corp., Chicago, has announced a reorganization of the company's switchboard department.

Robert P. Weed and Arthur A. Schneider have been named switchboard sales managers for the West and East, respectively. Weed will be in charge of the Western District and Schneider will handle the Eastern states. According to Gibson, this arrangement will permit Leich to give more personal service on equipment to Independent telephone companies in all parts of the country.

Weed was formerly switchboard department manager, while Schneider was switchboard sales manager.

Under the new arrangement, Leich's staff engineering group is also divided between the two districts, with two staff engineers being decentralized.

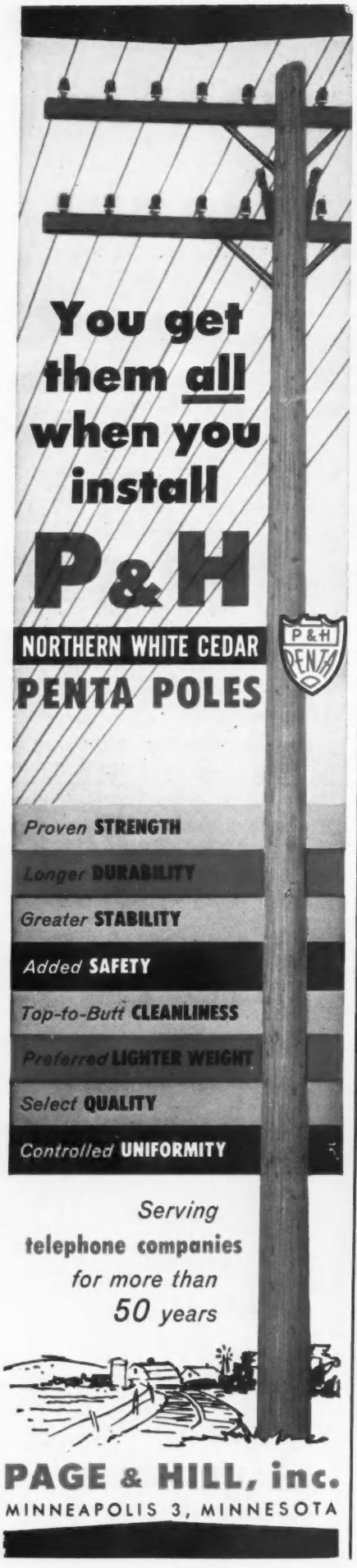
Louis J. Jordak will be located on the West Coast, and will cover the states of California, Nevada, Oregon, Washington, Alaska, Hawaii, Utah, Idaho, and Arizona. Walter P. Horn will handle the Southeastern states, and will now be located at Leich's Tampa, Florida, office. He will serve the states of Florida, Georgia, South Carolina, North Carolina, and Virginia.

Other members of the staff en-

ARTHUR A. SCHNEIDER

ROBERT P. WEED

LOUIS J. JORDAK



gineering group are also assigned to districts, but will continue to work out of Leich's Chicago office. William W. Newcum, Daniel R. Mierswa, and Karl H. Wittfoth serve the Western District, and Bryce H. Brown is assigned to the Eastern District.

WALTER P. HORN

Preformed Line Establishes Eastern Area Headquarters

PREFORMED Line Products Company has established an Eastern Area headquarters office at 1116 Kingwood Drive, Falls Church, Virginia, a suburb of Washington, D. C.

The new office, coordinating technical service and sales in the Atlantic and New England states, is under the supervision of Fred J. Lekson, district manager of sales, Eastern Area, who was previously headquartered in Cleveland.

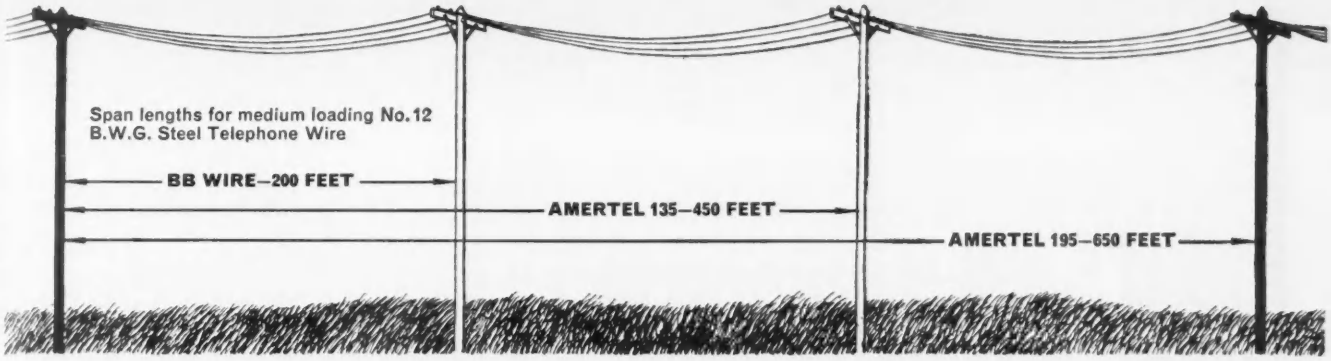
A Western Area sales office under the direction of Kenneth R. Miller was opened last November at Preformed's West Coast plant, Palo Alto, California.

Price Elected V.P., GT&E International

MILTON M. Price has been elected a vice president of General Telephone & Electronics International Incorporated, newly-formed international manufacturing, marketing, and engineering subsidiary of General Telephone & Electronics Corporation.

In his new post, Price is responsible for all manufacturing, sales, and engineering activities in Mexico and Central America, involving subsidiaries and associated companies. His headquarters are in Mexico City. Price will continue to serve as a vice president of Automatic Electric International, Inc.

LOREN M. BERRY (right), founder of L. M. Berry and Co., was honored by the Ohio Independent Telephone Association recently with a 50-year recognition luncheon in Dayton. He was presented with a past service pin by R. D. GOTT, general manager of the Wellington (Ohio) Tel. Co. and president of the association. Recipients of this award must have 50 years in the telephone industry and have served as an officer, director, or committee member of the association. Acting as toastmaster was Daniel W. DeHayes, executive vice president of the Ohio Independent Telephone Association. Luncheon guests were Walter S. Sparling, pres., Ohio Bell Tel. Co.; Clarence Pearce, vice pres. and gen. mgr., Southwest Area, Ohio Bell Tel. Co.; T. C. Watts, division commercial manager, Ohio Bell Tel. Co.; George A. Steele, pres., United Utilities of Indiana; Warren Silfer, sec., Germantown Independent Tel. Co.; and J. Warren Safford, pres., Troy-Tipp Tel. Co.



It's true...Amertel 195 has tripled span lengths!

In medium loading areas, the old 12 gauge BB Wire could be installed in spans of 200 feet using about 27 poles to the mile. Now, with the new extra-high-strength USS Tiger Brand Amertel 195, you can use spans of 650 feet with only 9 poles per mile. Of course, rough country may increase the number of poles somewhat, but the savings in poles and other equipment are obvious.

Amertel 195 has other advantages too:

- Greater strength increases its ability to withstand ice loading. This wire has been known to touch the ground under severe icing conditions without breaking.
- Better voice transmission efficiency
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More information—free! Just write for our booklet, "Amertel 195," American Steel & Wire, Dept. 0280, 614 Superior Ave., N. W., Cleveland 13, Ohio.

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Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Alabama, Southern Distributors
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INDUSTRIAL ELECTRONICS HANDBOOK

Prepared by a Staff of Specialists

Edited by WILLIAM D. COCKRELL General Electric Company

1408 pages, 6 x 9, 969 illustrations, 149 tables, $22.50

Any engineer or technician concerned with the design or use of industrial electronic equipment will find this Handbook of constant help. All of the material in it has been selected for its practical utility. Language and mathematics have been kept simple and graphical since experts in one area of this rapidly expanding field are often novices in another.

To almost every subject it covers this Handbook offers you an amazingly fresh approach. For example, most modern techniques such as magnetic amplifiers, logic circuits, transistors, and computers have been written about by the men who helped develop them. You'll find the sections on mechanical design, user requirements, and technical information truly unique in their concept. Even in the basic sections such subjects as binary arithmetic, Laplace transforms, and an extensive article on servo theory combine much original material of special interest to the electronic systems engineer.

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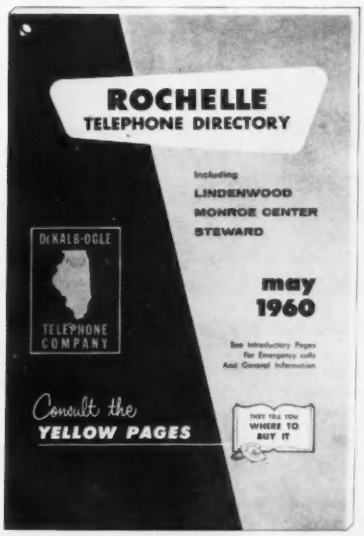

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DeKalb-Ogle Telephone Company

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CEECO TYPE C225
GALVANIZED STEEL CASE ASSEMBLIES

CEECO TYPE C225 GALVANIZED STEEL CASE ASSEMBLIES

FOR UNDERGROUND (VAULT MOUNTING), CONTAINING 4 TO 460 COILS.

- LEAD STUB ASSEMBLIES ARE PRESSURIZED.
- PLASTIC STUB ASSEMBLIES ARE SEALED IN THERMOPLASTIC COMPOUND.

These assemblies can be equipped with voice frequency coils. Types C632 (88 MH) and C638 (44 MH) Coils are for subscriber Loading, and Types C642 (88 MH) and C641 (44 MH) coils are for use on quadded inter-office and toll cables. Special coils can be made to meet other requirements.

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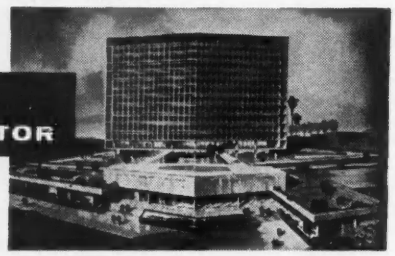
FLOOR-CON
... outmodes all other methods of telephone installation

Model No. 104 — shown with standard telephone equipment — accommodates up to 8 No. 44-A Western Electric connecting blocks (4 on each side). Model No. 102 takes up to 6 (3 on each side), or if desired, the back of the Floor-Con can be used for external ringers, buzzers, or auxiliary equipment. This allows the desks and furniture to be free from all telephone equipment.

TELEPHONE FLOOR CONNECTOR



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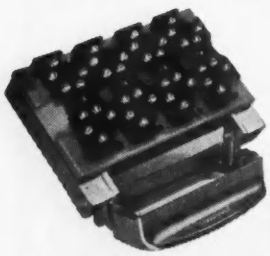

The fabulous FLOOR-CON allows phones to be connected entirely independent of office furnishings. Furniture may be moved or replaced without incurring expensive telephone changes. Gone are the clutter of equipment from desks and walls, and the needless marring of furniture.

Approved and specified by telephone companies, FLOOR-CON is used exclusively in many large buildings in business, industry and government. Attaches to all types of underfloor ducts and floor boxes, or fastens directly to the floor. Comes in four plated finishes to match the decor of the office.

FLOOR-CON — simplifies telephone connection service.

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For catalog information and prices, write —

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Baker Appointed Chief of Editorial Bureau

APPOINTMENT of Robert L. Baker as chief of the editorial bureau, Consolidated Electrodynamics Corp., has been announced. Baker will be responsible for preparation of material for the trade and technical press.

During the past year, Baker has been a public relations specialist with the ElectroData Division of Burroughs Corp.

Lenkurt Names Teall Mobile Operations Manager

DWIGHT E. TEALL has been appointed Mobile Operations Manager at Lenkurt Electric Co., Inc.

He will be responsible for developing, manufacturing and marketing both manual and automatic mobile telephone systems extending regular telephone service to all types of vehicles and to remote subscribers who cannot be served by wireline.

Teall joined Lenkurt as an engineer in 1952 and subsequently has held positions as instrumentation manager, quality control manager and military engineering service manager. Previously he was a development engineer at Mackay Radio & Telegraph Co., where he was involved in development and design of radio equipment.

SpaceCom Inc. Formed By California Group

A GROUP of senior telephone engineers and technicians headed by C. M. Robbins, Sr., has formed SpaceCom, Inc., 2331 4th St., Santa Rosa, Calif., to provide engineer-furnish-install service.

Initially, SpaceCom, Inc. through its Tel-Electro Engineering & Consulting Division will provide EF&I services in the 11 western states for wire, cable, radio and microwave components and systems.

Robbins has had over 30 years experience in commercial and military communications field, and is a member of the Independent Telephone Pioneer Association, a senior member of the American Association of Engineers and the Institute of Radio Engineers, and a member of the American Institute of Electrical Engineers.

Frederick L. Kahn Honored By Automatic Electric

AUTOMATIC Electric's highest honor, the Talbot G. Martin Award, has been presented to Frederick L. Kahn, director of the telephone switching systems development department of Automatic Electric Laboratories, Northlake, Ill.

The annual award was made by the Strowger Automatic employe

FREDERICK L. KAHN

clubs in recognition of his "outstanding contribution to the art and science of communications."

A lifelong student of telephony, Kahn received his education at the University of Frankfort and the Institute of Technology in Berlin, Germany. He began his association with the company in 1923 as an equipment engineer. Before promotion to his present position, he held supervisory positions in systems analysis, sales and equipment proposals, and cost studies. He was named systems consulting engineer in 1954.

Kahn has become a specialist in all phases of automatic switching and has written numerous articles on the subject for technical publications. He has also traveled widely in consulting with telephone companies, and coordinating the technical activities of the company's foreign manufacturing plants in Canada, Belgium and Italy.

Kahn is a member of the American Institute of Electrical Engineers and holds six patents on telephone switching systems improvements.

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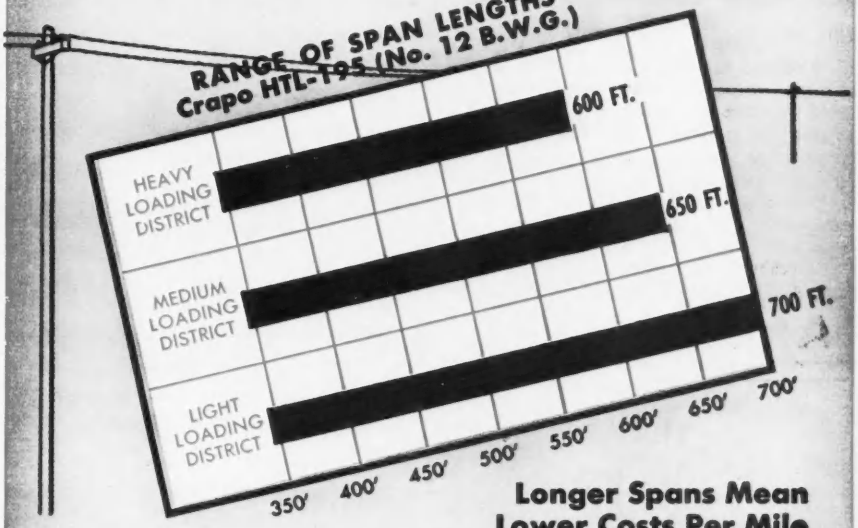

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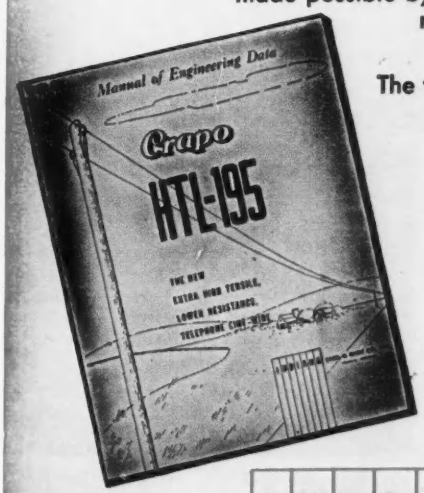
Pertinent technical data have been prepared to assist engineers in designing and building extra long span lines with Crapo HTL-195.



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C. S. Canfield Named Dist. Mgr., Holan Corp.

CHARLES S. CANFIELD, Jr., has joined Holan Corporation, Cleveland, as district manager at York, Pa. He will direct Holan sales activities in parts of Delaware, Maryland, New Jersey, Pennsylvania and the District of Columbia.

Canfield was a sales engineer for the Body Division of York-Hoover Corp. before joining Holan.

J. D. Littlejohn Joins C. P. Clare & Co.

C. P. CLARE & CO., Chicago manufacturer of relays and related control components, has announced the addition of John D. (Doug) Littlejohn as a sales engineer in the company's Los Angeles office. A Syracuse engineering graduate, Littlejohn was with the western office of Thompson-Ramo-Woolridge, Inc.

Sierra Appoints New Director of Engineering

THE APPOINTMENT of Joseph Robert Lewis as director of engineering for the Sierra Electronic Division of Philco Corp. has been announced.

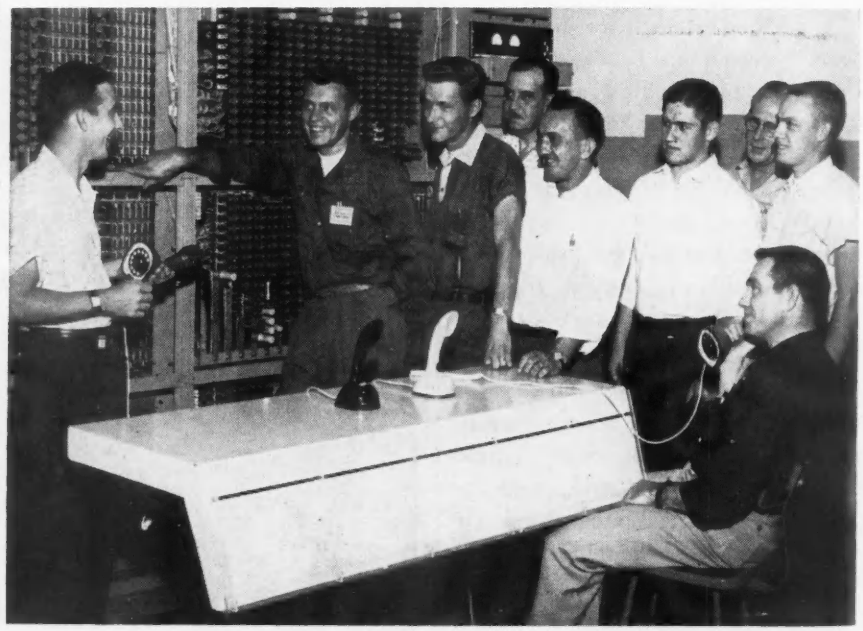
A veteran of 14 years service with Philco, Lewis will take charge of all engineering and design activities at the division's offices at 3885 Bohannon Drive, Menlo Park, Calif. These facilities are currently undergoing expansion to more than double their physical size.

Customer Training Course Offered by North Electric

NOW IN progress at North Electric's new Technical Training Center, Galion, Ohio, is the manufacturer's first customer training course in the operation and maintenance of North NX-2 Modular Crossbar.

The course consists of 160 hours of instruction and practical work on all phases of NX-2 Crossbar. Graduation and presentation of completion certificates July 7 brought to an end the initial NX-2 Training Course.

The new Technical Training Center is a two-story, air-conditioned brick and concrete building, with classrooms and offices located on the upper floor. The ground floor is in process of being prepared for practical instruction in other phases of customer training, including special instruction in maintenance and operation of North AuTollizer Premium Toll Ticketing.



PETER BENNETT, North Electric's senior engineering instructor, explains principles of NX-2 Modular Crossbar to (l. to r.) MERLIN HAUGESTUEN, Chibardun Tel. Co., Dallas, Wis.; ROBERT TURNER, Nelson-Ball Ground Tel. Co., Tate, Ga.; DARL WOODRUFF, Chillicothe Tel. Co., Chillicothe, Ohio; DON SPONHOLTZ, Stockbridge & Sherwood Tel. Co., Appleton, Wis.; JERRY HOLT, Peoples' Tel. Co., Bigfork, Minn.; DON HOVDE, Stockbridge & Sherwood Tel. Co., Appleton, Wis.; and MIKE HOLT, People's Tel. Co., Bigfork, Minn. Seated is JIM LEACH of North Electric.

Copperweld Promotes Gordon Cavanagh

GORDON CAVANAGH has been promoted to the position of product manager for Alumoweld, Copperweld Steel Company's new aluminum-covered steel wire and strand.

Cavanagh will continue to be located at the division's headquarters

GORDON CAVANAGH

at Glassport, Pa., where he was development engineer. Prior to moving to Glassport he was a sales engineer for Copperweld covering the states of Indiana and Michigan.

In his new position, Cavanagh will be responsible for the co-ordination of the Alumoweld activities in the various departments of the Wire and Cable Division.

I. W. Borda Retires From The Okonite Co.

AFTER 36 YEARS of company service at The Okonite Co., wire and cable manufacturing subsidiary of Kennecott Copper Corp., Ignacio W. Borda, vice president and general sales manager, retired recently.

Until 1957, when he assumed responsibility for all Okonite's field sales personnel and market specialists at the company's Passaic, N. J., headquarters, Borda had served on the West Coast. Starting as a sales representative in the San Francisco office in 1924, he rose to the position of Pacific Coast manager in 1928 and was named a vice president in 1929.

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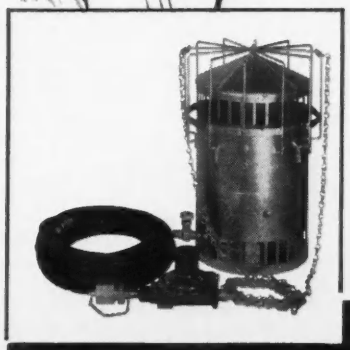

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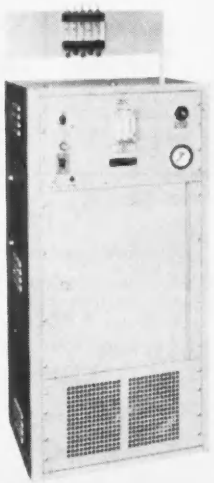

Used for pressurizing aerial and underground telephone cables, the Model RC Dehydrator Automatic is designed for small installations of 80 to 100 miles of cable. It is a floor mounted unit. Operating voltage is 115/220 volts, 1 phase, 60 cycle, and the output is 700 standard cubic feet per day maximum, with dewpoint of — 70°F.

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CABLE SPLICER; Telephone Maintainer with carrier equipment experience. Not over 35 years of age. Write or apply Room 213, 1301 Market Street, Chattanooga 2, Tenn.

MICROWAVE COMMUNICATIONS ENGINEER — For assignment at ATHENS, GREECE. Must be experienced in requirements and installation design, siteing, path studies, carrier and multiplex. Please send detailed resume or telephone R. G. Whitmore, National Scientific Laboratories, Inc., 2010 Massachusetts Ave., N. W., Washington, D. C. Tel.: HUdson 3-4030.

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TECHNICAL POSITION, Wire Chief or equivalent. Ten years experience including thorough training in step dial equipment, carrier, toll ticketing and related direct distance dialing apparatus, engineering experience. Write Box 127, c/o TE&M, 7720 N. Sheridan Rd., Chicago, Ill.

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3-Sub-cycle (Loraine), ringing machines @ $10.00 each. 10 — 601 Leich-wall or desk, C B @ $5.00 each. 20 Kick coils for magneto board so you can use C B Telephones on your magneto board. 200 — Joslyn single upset spools bolts with insulators @ .40 each. W. C. Hanson, Viking Telephone Co., Hanska, Minn.

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Cases	2.50 ea
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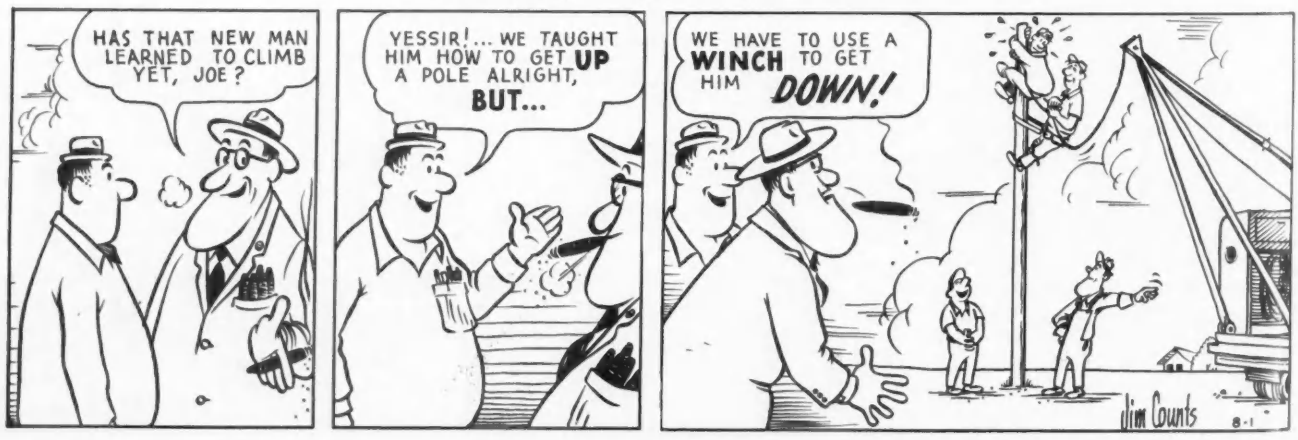
"CHARLIE," by Jim Counts


HAS THAT NEW MAN LEARNED TO CLIMB YET, JOE?
YESSIR!... WE TAUGHT HIM HOW TO GET UP A POLE ALRIGHT, BUT...
WE HAVE TO USE A WINCH TO GET HIM DOWN!
Jim Counts
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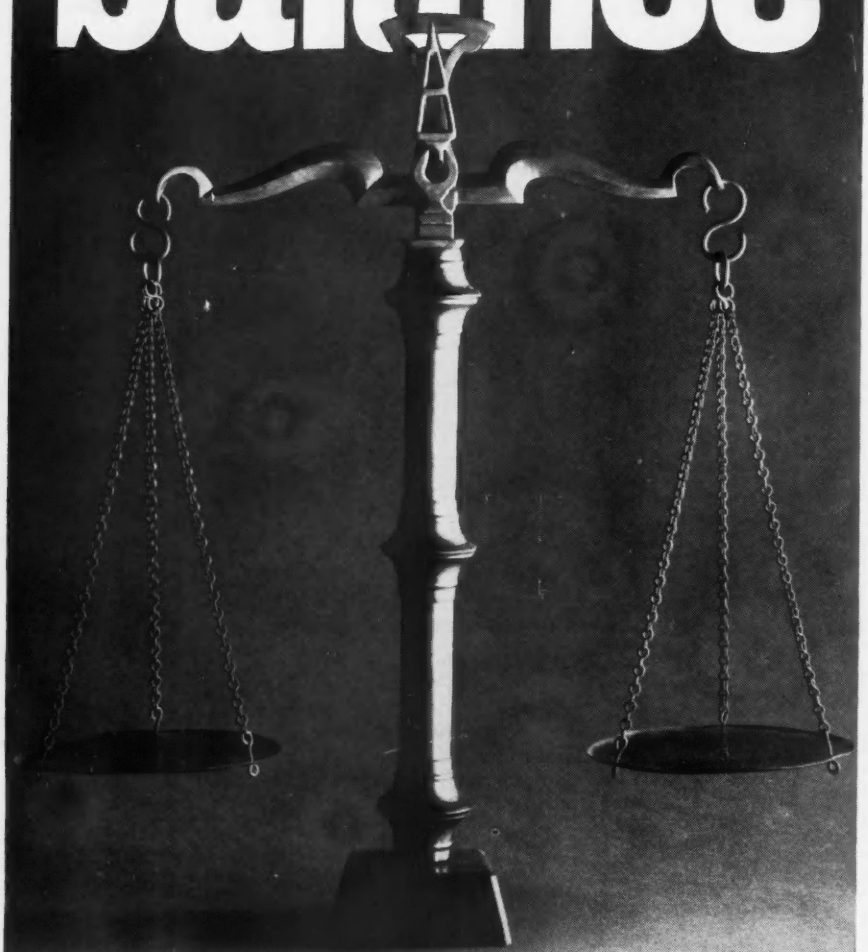
Reinforced drop wire with built-in balance



National Distributors: Automatic Electric Sales Corporation, Northlake, Illinois/Leich Sales Corporation, 427 W. Randolph Street, Chicago, Illinois.

ALPHADUCT
WIRE AND CABLE CO.
NEW BRUNSWICK, N. J.

Regional Distributors: Buckeye Telephone & Supply Co., Columbus, Ohio/The Lindsay Telephone Supply Company, Cleveland, Ohio/Pankey Supply Co., Charlottesville, Virginia.

Stromberg-Carlson Names Clark to Iowa Sales Post

T. C. THOMPSON, general manager of commercial sales for Stromberg-Carlson's Telecommunication Division, has appointed Robert N.

ROBERT N. CLARK

Clark as junior sales representative for the state of Iowa. Stromberg-Carlson is a division of General Dynamics Corp.

In his new position Clark will team with J. E. Fairly, Iowa sales representative, to cover expanding Independent telephone operations in that state. He will report to W. J. Pfaender, Chicago branch sales manager.

Automatic Electric Names Carlson Training Supervisor

JAMES J. CARLSON has been named supervisor of technical training for Automatic Electric Co., subsidiary of General Telephone & Electronics, Northlake, Ill. He succeeds Robert C. Kuntz, who has joined the sales organization.

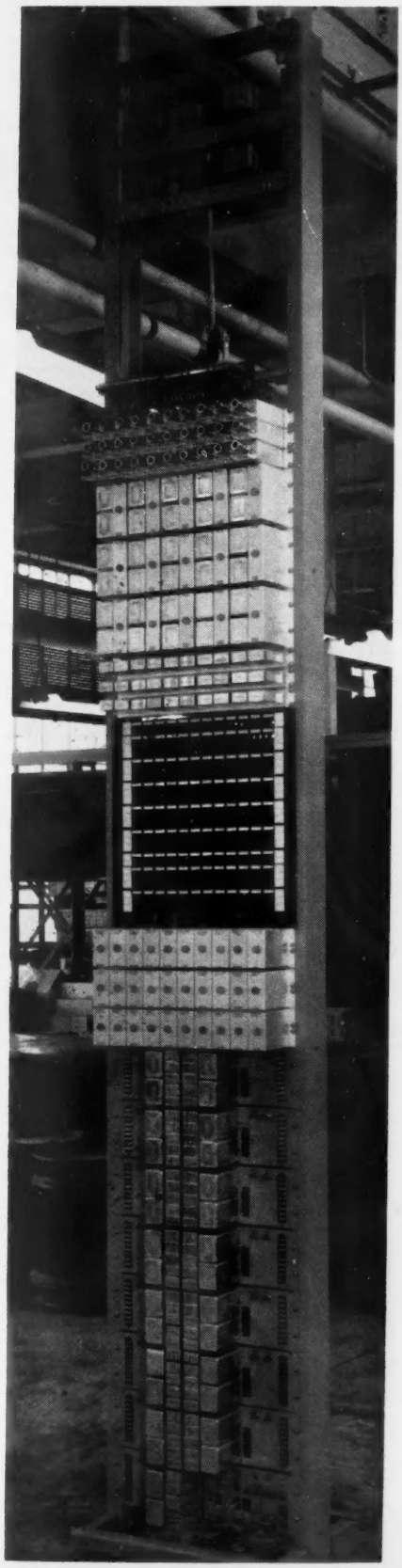
Carlson will be responsible for supervising training activities for the company's telephone and industrial customers. The AE training school offers a variety of courses, including Telephone Central Office Maintenance, Strowger Automatic Toll Ticketing (SATT), PAX Maintenance, and Maintenance of Industrial Relays and Switches.

Carlson joined the company in 1957 as an instructor in the training school.

Transmitter

PUBLISHED BY STROMBERG-CARLSON
A DIVISION OF GENERAL DYNAMICS

News and views of Independent telephone people VOLUME 9, NO. 5 • AUGUST, 1960



One big, one small—both do a job

"If one were available right now, I'd buy it!"

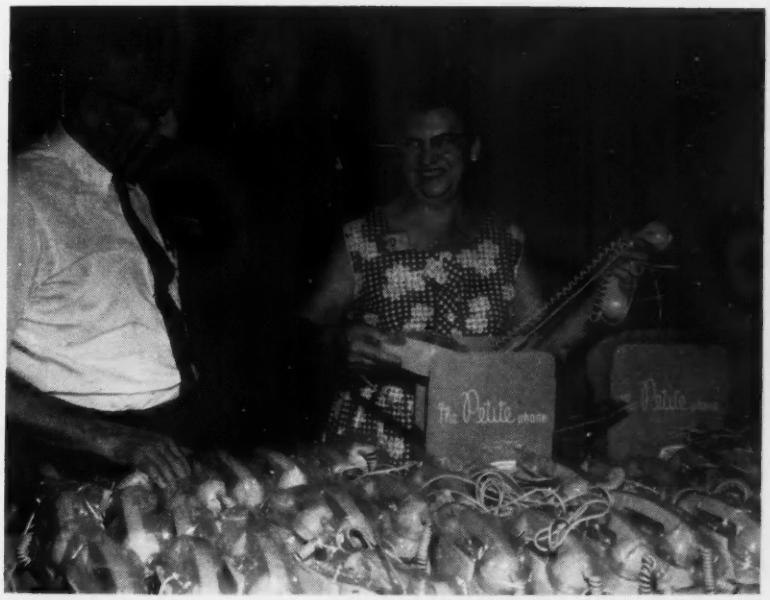
The speaker, a Stromberg-Carlson customer, had just seen the custom-engineered package of 551 Hybrid Repeaters and 558 Four Wire Terminating Sets shown at the left. His response was no surprise, because this package was created as an answer to a specific need in the Independent telephone field.

The equipment was being assembled at the Rochester plant for a telephone office in Pennsylvania. It efficiently combines in one bay frame the features of hybrid repeaters and four-wire terminating sets.

Precision terminating sets replace resistance-type hybrids used with standard repeater equipment. This insures the highest hybrid balance and permits maximum gains while meeting today's requirements for minimum return loss. The amplifier provides up to 37 db. gain. Overall gain from the repeaters will depend on the application.

Testing and patching are greatly simplified; components can be electrically interchanged merely by plugging into the combination test panel and jack field.

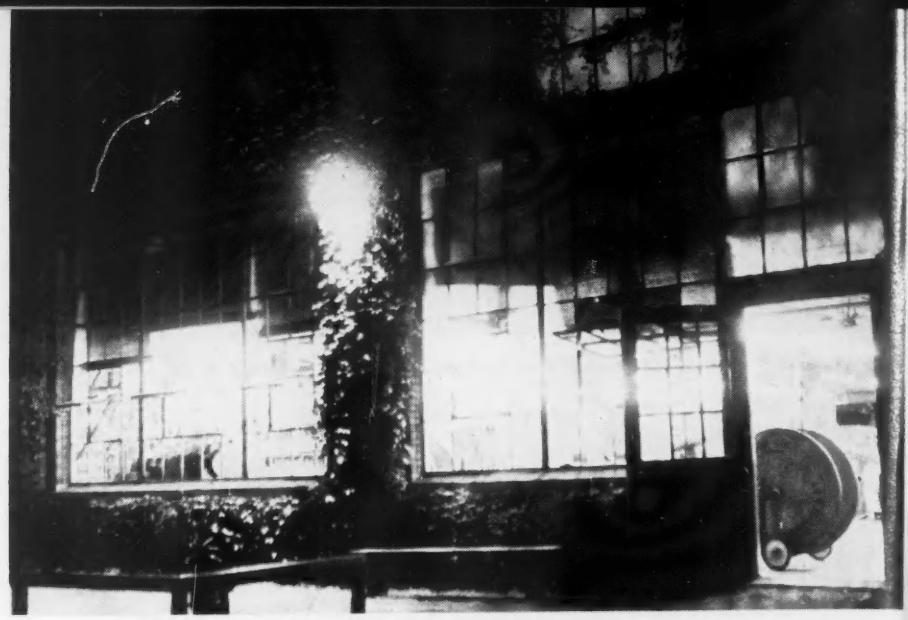
Components for 15 circuits fit snugly into a bay 11½ feet high by 19 inches wide. If fewer circuits are required, the package has also been designed to fit bays 9 feet high. It will work efficiently with any make of dial equipment.



Small phone in big demand. Subscriber requests for the new PETITE telephone have kept Stromberg-Carlson assembly lines moving at a fast pace. Owen Howk, foreman of telephone assembly, checks with Mary Shell about meeting another shipment.

This 15-circuit package of 551 Hybrid Repeaters and 558 Four Wire Terminating Sets was designed to meet specific requirements of a Pa. Independent.

Advertisement



Surrounded by quiet darkness on a summer's night, the cable room maintains steady production.

They work all night

Telephone instrument molding, cable spinning never stop

Telephone service follows no time clock — it never quits. The telephone night operator knows well the feeling of loneliness that presses in from the surrounding darkness. Everyone else has gone home. Then a lamp glows . . . others are depending on her to keep communication alive and ready at all times.

It's lonely, too, in a big, dark manufacturing plant between midnight and the first streaks of dawn. The thousands of men and women at Stromberg-Carlson become a mere handful on the "graveyard shift." There are the guards, a nurse, a maintenance man or two, and, at this writing, two production departments operating around the clock. They, too, understand the importance of their jobs.

The plastic molding department is busier than ever now, since the PETITE telephone has been put on the market. Even before this, in order to have better control of color, materials and workmanship, Stromberg-Carlson had increased productive capacity so as to keep all manufacturing operations under its own roof.

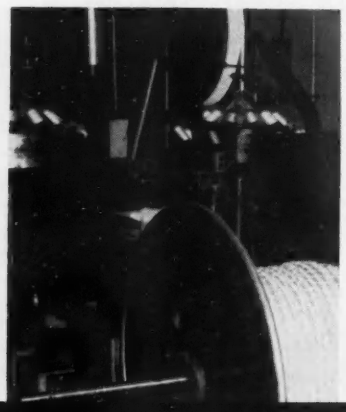
The problem of color purging has been studied continuously so that a quick change to any of the 10 basic colors can be made. New presses have been added, job functions streamlined — still the hungry jaws of demand ate up the production too quickly. A third shift was the only logical answer.

At the other end of the plant, the cable room continuously turns out the miles of switchboard cable required daily. Its production is closely tied to the dial conversion rate among Independent operating companies. Since that rate has exceeded even the most optimistic forecasts, the cable room finds that 24-hour production is the most practical solution.

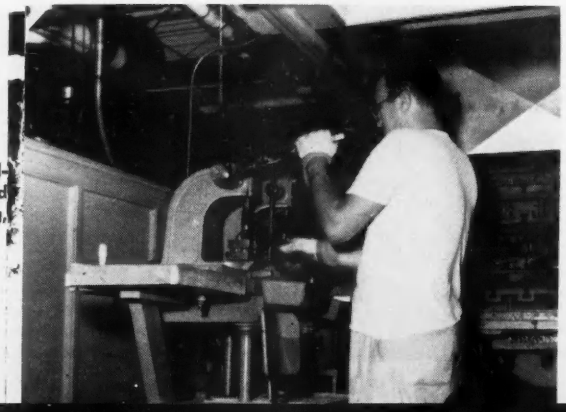
The huge lacquer towers that rise like giant fingers are an impressive symbol of the department's work. Like the people who work in the cable room, their job continues around the clock.

Subscriber acceptance of extension phones has pushed production to high levels. Here transmitter and receiver caps are molded.

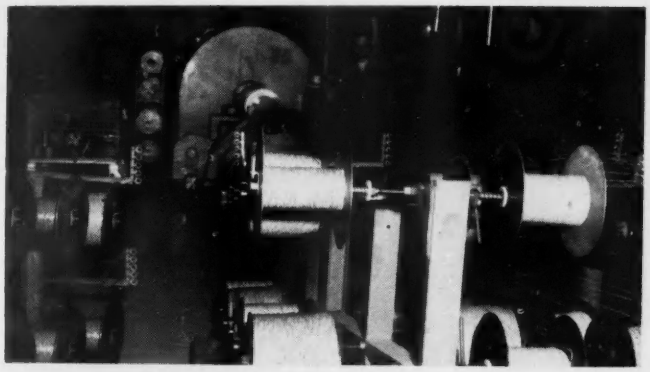
Strong cotton yarn is wrapped around cable as final step before painting.



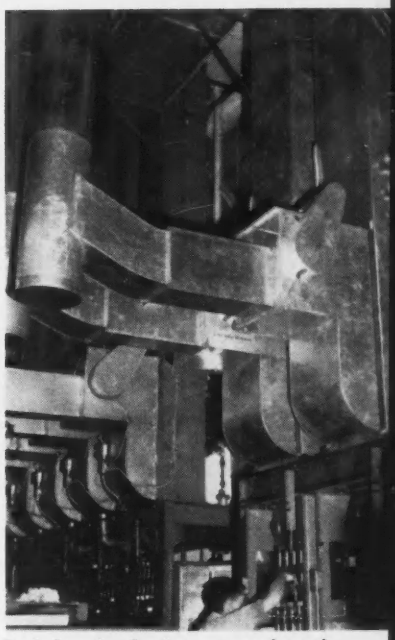
This method of handset molding has been almost replaced by a faster, more exacting, automatic injection press.



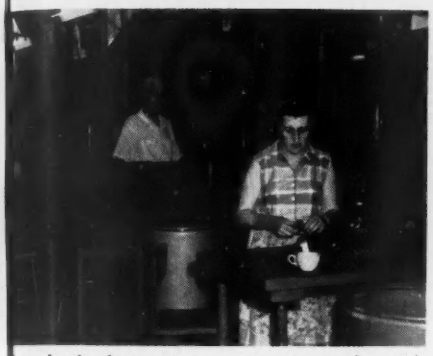
Advertisement



This cable strander can accommodate up to 102 pairs of color-coded wire. Heavy demands keep it running most of the day and night.



Each length of wire passes through these tall lacquer towers six times to receive flame-proof insulation.



...r plastic instrument parts are made with ...setting material. Careful study of plastics and ...g has produced a lasting, rugged instrument.

Three important operations in instrument production: right, making part for the PETITE phone; center, buffing handset; left, tapping terminal plate.

"Too old at 31," C. W. Chastain now heads 37-office company

Too old to work, too young to quit! That's the story of C. W. Chastain.

Mr. Chastain manages the Grand River Mutual Telephone Corporation, whose headquarters are in Princeton, Missouri. It is one of the largest REA-financed telephone companies.

In 1939, Mr. Chastain worked for the Missouri state auditor's office. He left his job when the governor withheld state funds from that department for five months. He sought more permanent employment in Kansas City. At the age of 31, he was told that he was too old to get work.

Later, when state funds were again paid to the auditor's office, Mr. Chastain returned to work there. But he was still looking for a job where his talents could not be blocked by political whims. The telephone business offered this opportunity.

Mr. Chastain joined Middle States Utilities, a telephone company, as an auditor. He also handled the duties of commercial superintendent and traffic superintendent. In January, 1949, he moved up to the position of commercial manager of the Southern Continental Telephone Corporation of Cookeville, Tennessee.

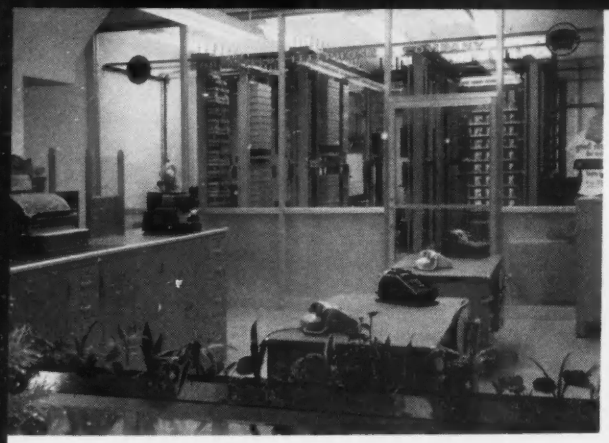
When the Grand River company started operations four years later, Mr. Chastain was selected to be general manager. At that time the company had 20 offices. It now has 37. Twenty-eight of these are dial offices, all served by XY® Dial.

The company plans to convert the nine remaining manual offices to dial in the near future. Included with them will be ten other offices whose subscribers have asked to be added to the Grand River organization. When this work is completed, 16,380 subscribers in northern Missouri and southern Iowa will receive dial service from Grand River Mutual. REA financing of this company will total more than eight million dollars.

Managing the third largest Independent telephone company in Missouri keeps Mr. Chastain pretty busy. He still finds time, however, to participate in civic affairs and serve as a director of the Missouri Telephone Association.

But Mr. Chastain has not forgotten the day, 21 years ago, when he was declared "too old to work." Among the employees of the Grand River company are a number of older persons. Mr. Chastain says they are some of his company's most efficient workers. He knows that age means experience — mature, seasoned judgment — one of the greatest assets a man can bring to any job.

C. W. Chastain with his wife, the former Faith Payne of Milan, Missouri. Like her husband, Mrs. Chastain enjoys keeping busy. She spends much time in the garden working with her roses.

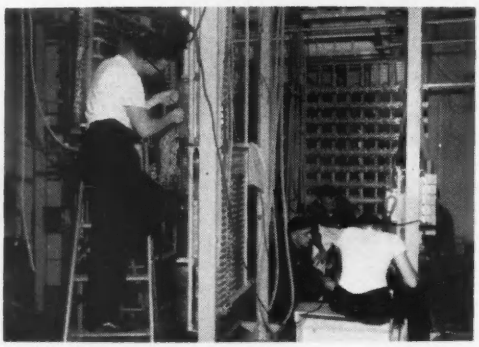


XY Dial equipment in full view of subscribers entering office.

Satisfying sequel at Northfield, Vermont

George Goodrich has recently sent in photos of his expanded and remodeled office at Northfield, Vermont. Result — better service for more subscribers.

George Goodrich, manager.



Mr. Goodrich praised work of Stromberg-Carlson's installers under foreman Fred Rutland. Men added 100 lines and moved entire dial system to new location without interruption to service. Public was amazed!

Texan sends rice to meet price (but not twice)

"Must be the interest. It's a white bag."

Warren Schomaker, assistant telephone finance manager at Stromberg-Carlson, had just received his morning mail. On top was a small white bag with an address label attached. The label was marked "Credit Corp. monthly payment," and the bag bulged with rice. It was sent by Ervin H. Stienke, a rice grower and successful telephone company owner in Garwood, Texas.

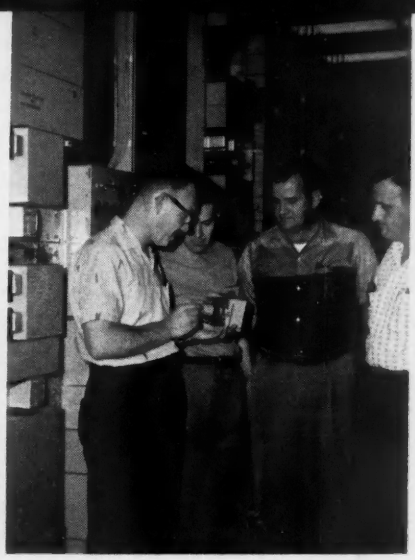
Mr. Stienke had set the stage for the unusual payment several years ago at a Texas State Telephone Convention. He had just converted his Garwood office to XY Dial with an assist from the Credit Corp. At the same time, his rice growing had started to show results.

"If I can't sell all my rice," he told Mr. Schomaker, "I'll send what's left as a payment on my loan. A brown bag for the principal, white bag for the interest," he joked.

One morning the rice arrived.

That was the only shipment, however, so Mr. Stienke must have sold his crop without difficulty. Mr. Schomaker sincerely hopes so. At present, his office has no provision for a granary.

This is the payment! Grown in Garwood, Texas, the rice was air-mailed to the Credit Corp. in Rochester, N.Y.



Instructor Eugene Scheel, left, calls attention to a detail of the detector-amplifier which detects identification signal of calling party.

Thirteen study to meet growing DDD challenge

Dynamic strides in handling DDD calls have left some telephone people amazed at the progress of their own industry. But not the 13 men who attended Stromberg-Carlson's latest XY Toll Ticketing school. They've thoroughly studied the equipment that makes DDD work.

Key employees from forward-looking Independents across our country dug deeply into the theory and practical application of this approach to toll service. Other countries are interested, too. One of the students was Han-Lin Lin, from the Telecommunication Division of the Government of Free China in Formosa.

Five representatives from Stromberg-Carlson's staff of installation and inspection personnel also enrolled in the Toll Ticketing school. To meet the challenge of increased communication demands, more men trained in the technology of DDD will be needed. The Independents and the

Formosan engineer Han-Lin Lin learns about ticket printing operation from instructor-in-charge Angelo Aschettino.

Operating companies were represented in the Toll Ticketing class by Archie L. Bennett, United Telephone Company of Pennsylvania, Bedford, Pa.; John C. Brewer, Jr., Florida Telephone Corp., Ocala, Fla.; Gilbert F. Chesterton, Western Telephone Co., Weaverville, Calif.; Milton E. De Groodt, California Pacific Utilities Co., Myrtle Creek, Ore.; Dale B. Lewis, Western Reserve Telephone Co., Hudson, Ohio; Roland J. Makibbin, United Telephone Company of Pennsylvania, Hanover, Pa.; Gordon L. Perry, Central Western Telephone Company, Oil Dale, Calif.; Han-Lin Lin, Telecommunication Division, Government of Free China, Formosa.

Stromberg-Carlson personnel include Donald O. Beckstine, Philip M. Bruckart, Rolf Olsen, William F. Provance, and John J. Sturtevant.

From Pennsylvania to Formosa, one aim—to learn

manufacturers are meeting this challenge together.

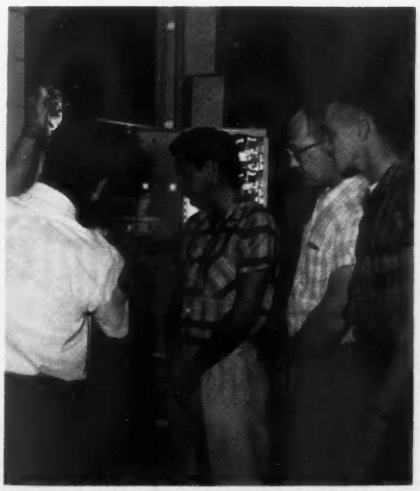
The eight-week course at the Toll Ticketing school gives the students a chance to work with the equipment as well as to learn about it. Bays of Toll Ticketing equipment are set up just as they would be in a typical operating office. Calls are actually placed over the system so that the entire step-by-step action can be traced.

Training techniques used in the course have been developed from the well-known Stromberg-Carlson XY Dial school. More than 1,300 men and women from operating companies, branches of the military, and Stromberg-Carlson have successfully completed the XY Dial course.

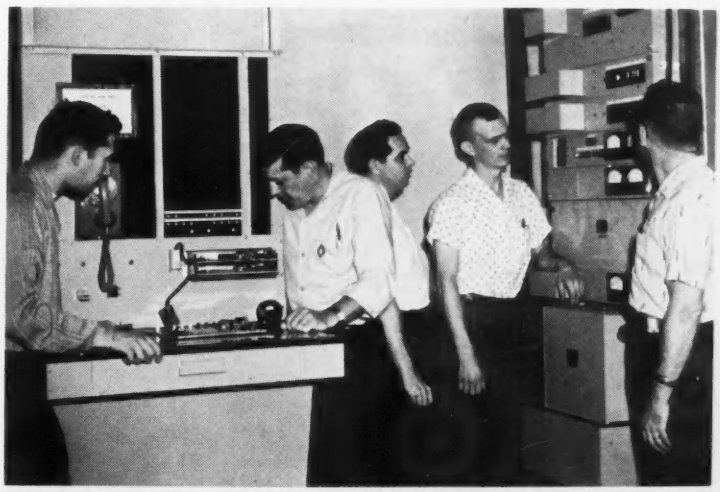
The Toll Ticketing course follows as a logical sequence to XY Dial Training. Students who enter the more advanced course have completed the XY Dial school or have achieved its equivalent in practical experience.

Subscriber acceptance of DDD assures a continued growth in this field. A well-founded knowledge of the equipment involved will be a prime concern in the future. Students at the XY Toll Ticketing school are making it their business to see that this knowledge is ready to be put to work.

Stromberg-Carlson installers Philip Bruckart, left, and Rolf Olsen, right, work on XY Toll Ticketing recorder under eye of instructor.



Register-sender came in for careful study during the eight-week course.



Students learned the many ways test panel, left, and power board can supply valuable information about the system.

Harvey Brumbaugh, State representative, from Eaton, Ohio, poses interesting question as government and company officials tour the plant on night before open house.

Eaton, Ohio

Large groups of Eaton, Ohio, residents braved unseasonable Buckeye weather to attend the recent open house conducted by the Ohio Telephone Service Company.

The townspeople, already enjoying XY Dial service, got an inside look at the two-story addition built to house the new switching equipment. Company management has planned wisely and space is available to expand the office to three times its present size.

Ohio public again demostrates interest in dial

Opal Duke (center of the picture), chief operator at Eaton, describes function of the Stromberg-Carlson toll board to visitors. The two-day open house was well attended despite wind and heavy rains in the area.

Fred Stevenson (back to camera), central office equipment maintenance supervisor for Ohio Telephone Service and United of Indiana, captures interest of his group with facts about the XY Dial equipment.

OHIO TELEPHONE SERVICE CO.
A Subsidiary of UNITED UTILITIES, Inc.
North America's Second Largest Independent Telephone System
EXTENSION

Eye-catching extension phone display is center of attraction as three Ohio Telephone Service district managers discuss open house with Eaton mayor. From the left: H. F. Clapper, Greenville, Ohio; J. E. Pequignot, Eaton, Ohio; E. R. Hetzler, Sidney, Ohio; and mayor Glen Moysey, Jr.

Transmitter

GEORGE B. FORBES, Editor
J. T. LONG, Associate

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Rochester 3, New York

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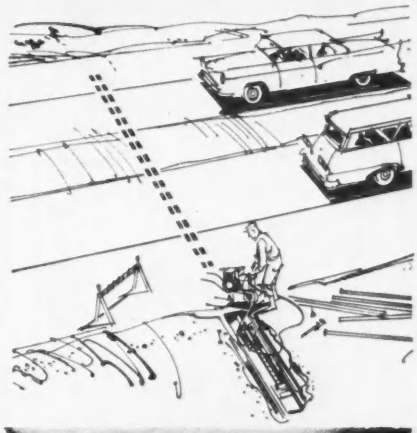
EASY, LOW-COST WAY TO RUN PIPE UNDER STREETS AND WALKS



Greenlee Hydraulic Pipe Pusher

Traffic proceeds as usual when your piping for underground cable crosses under the street this simple timesaving way. Model No. 790 shown pushes ¾" - 4" pipe about two feet per minute with power pump. A small ditch in the parkway accommodates the pipe pusher — streets and walks remain undisturbed, total job time is cut to a fraction. Ask your supplier for details or write for free literature.

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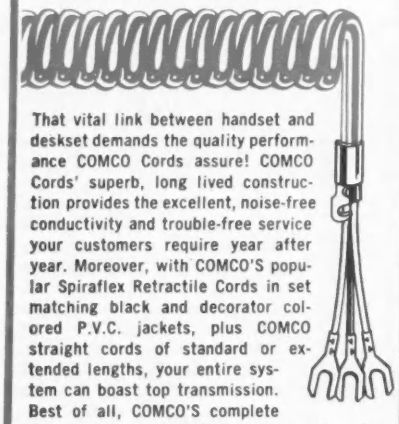
GREENLEE TOOL CO.
1777 Columbia Avenue
Rockford, Illinois

GREENLEE

WHAT'S MISSING?

His COMCO Spiraflex Retractile Cord, of course!



That vital link between handset and deskset demands the quality performance COMCO Cords assure! COMCO Cords' superb, long lived construction provides the excellent, noise-free conductivity and trouble-free service your customers require year after year. Moreover, with COMCO'S popular Spiraflex Retractile Cords in set matching black and decorator colored P.V.C. jackets, plus COMCO straight cords of standard or extended lengths, your entire system can boast top transmission. Best of all, COMCO'S complete line includes cords with the construction, terminals and strain relief you require, and immediate delivery is COMCO'S pride.

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS

Problems Pressed

ONE-MINUTE pressing service is being provided by San Antonio accounting people. Of course, it's for creased and wrinkled billing cards only! The cards were being rejected by accounting machines and causing considerably delay. H. P. McMillan, accounting office supervisor, vetoed $3,000 worth of equipment designed to straighten the cards. Instead, $30 was invested in three electric irons, hand operated, which literally "iron out" the problem. J. W. Farrimond, accounts supervisor, and McMillan claim the whole idea leads to the question, "Does C.P.A. stand for cleaning, pressing, and alterations?"

Progress Is Progress Is Progress

IN SPEAKING of the conversion to dial, a columnist in the Eastland (Tex.) *Telegram* stated:

"Of course, it's all progress, and you can't stop progress and still progress."

Strictly Partisan

THE Republican national committee tried to get Lincoln, but they had to settle for Harrison, and the committee headquarters in Chicago's Conrad Hilton hotel had a special phone number, HArrison 7-1960.

Harrison stands for Benjamin Harrison, who was nominated at the convention in Chicago in 1888. The figure "7" is traditionally considered lucky and "1960" corresponds with the year of the convention.

The committee had requested a "Lincoln" exchange to commemorate the 100th anniversary of the nomination of Abraham Lincoln.

Moscow's Best Seller

MOSCOW had a new best seller last month — the city's first telephone directory in six years.

Muscovites snapped up all 15,000 copies put on sale for 13 rubles ($1.30 at tourist exchange rate) at newsstands.

The collector's item telephone directory has 892 pages including 636 pages of individual telephone subscribers. Among the unlisted: Khrushchev, Nikita S.

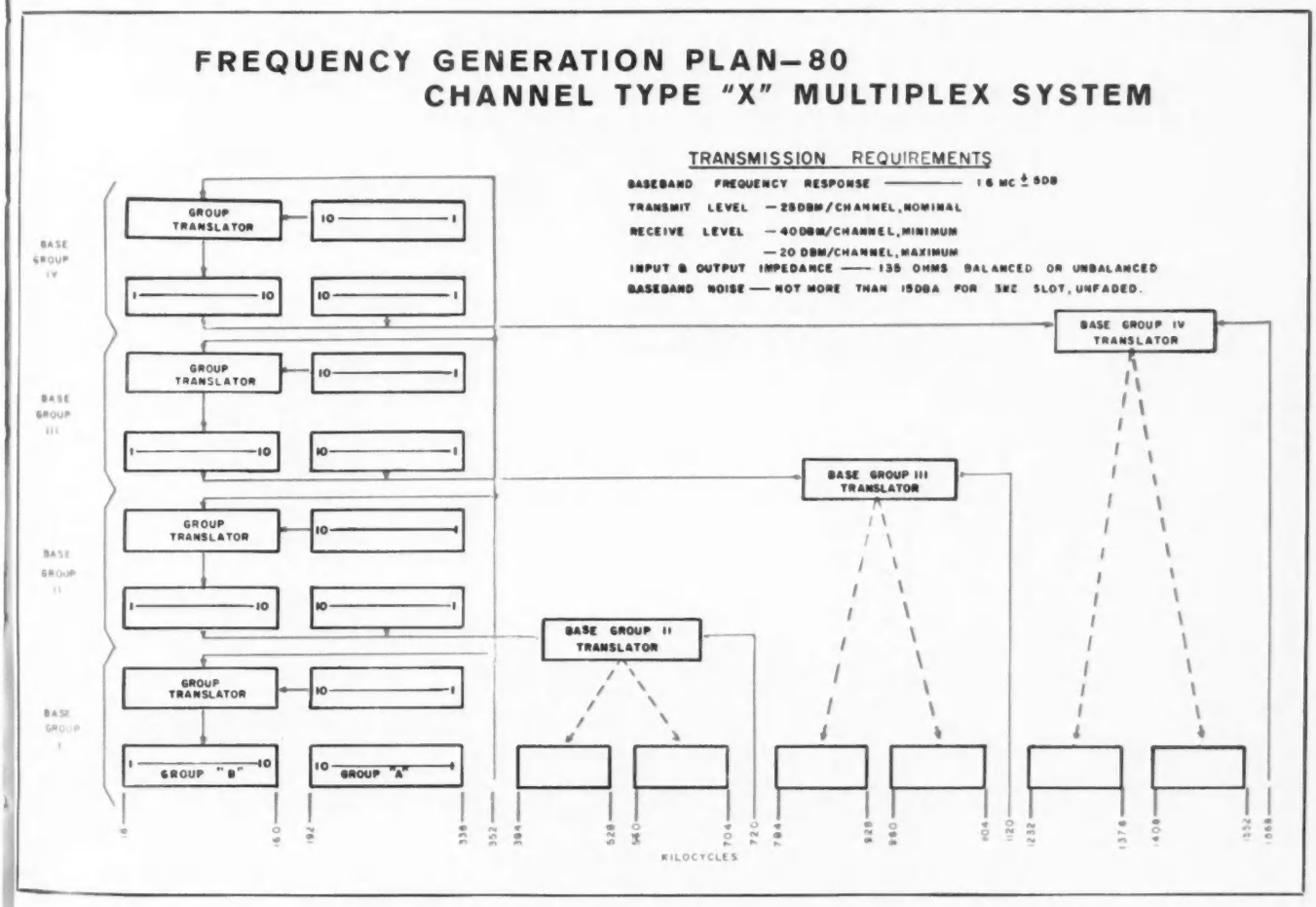
The directory contains 210 pages of apartment house telephones because many of Moscow's 6,000,000 residents still live in communal apartments pending completion of a 12-year house-building program.

There were about 100,000 individual telephone subscribers listed. The most popular name was Ivanov (Russia's "Smith") with 600 listings.

PANHANDLE
TRANSISTORIZED
"X" CARRIER SYSTEM

Panhandle Type "X" Transistorized Angular Modulated Multiplex offers the first economical approach to the communication industry's need for light route microwave installation. Type "X" multiplex has many advantages: low transmission loss, high signal to noise ratio and versatile signaling options. The modulation plan employed permits channel dropout and insertion at intermediate repeater locations as well as extension of the multiplex system from the RF equipment locations over regular exchange cable facilities.

FREQUENCY GENERATION PLAN—80 CHANNEL TYPE "X" MULTIPLEX SYSTEM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BASEBAND FREQUENCY RESPONSE ——— 1.6 MC ± 5DB
TRANSMIT LEVEL —25DBM/CHANNEL, NOMINAL
RECEIVE LEVEL —40DBM/CHANNEL, MINIMUM
—20 DBM/CHANNEL, MAXIMUM
INPUT & OUTPUT IMPEDANCE —— 135 OHMS BALANCED OR UNBALANCED
BASEBAND NOISE — NOT MORE THAN 15DBA FOR 3KC SLOT, UNFADED.
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BASE GROUP III
BASE GROUP II
BASE GROUP I
GROUP TRANSLATOR
GROUP "B"
GROUP "A"
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Royce Ferguson

Royce is one of our "Revenue Men" in Spokane, Washington.

In 1942, Royce interrupted his college career to join the U. S. Air Force. As a bombardier in North Africa and Italy, he flew 50 combat missions — and was awarded the Distinguished Flying Cross with an oak-leaf cluster and the Air Medal with six oak-leaf clusters.

Royce came home in 1945 and began a career in sales. In 1954, he joined General Telephone Directory Company as a sales representative in our Spokane Division. By 1956 he was promoted to Sales Supervisor.

Royce has kept up his education through USAF correspondence courses — and has completed more than five hundred hours of study.

Now living with his wife and two children in Spokane, he is active in the BPOE, VFW, Early Birds and the U.S. Air Force Reserve.

Royce Ferguson is a good example of the "Revenue Men" who work for General Telephone Directory Company and for you. Men who are an asset to any community.

From A to Z, we can give you complete, quality directory service—sales, publishing and printing. Wherever you operate, our trained "Revenue Men" are nearby. They're working out of 35 strategic locations coast to coast.

Our "Revenue Men" act as telephone company representatives in their day-to-day contacts with your customers. They're not only salesmen—they are also good-will ambassadors for you, in their dealings with the public.

They're experienced hands at helping Independent Telephone Companies, both large and small. So why not let us build directory revenue and good will for you through our complete service? Write or phone if you'd like to discuss it—without obligation!

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